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SCHOOL OF EDUCATION
BOSTON UNIVERSITY

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ATTENDANCE ON SUMMER SCHOOLS

The *New York Times* published the following editorial.

Looking over the statistics of attendance at the summer schools in all the states for 1928, one is impressed by the number of teachers who gave over a good portion of their long vacation to study. The total estimated number of teachers, principals, supervisors, and administrative officers in the United States is but little short of a million—900,700. In Oklahoma, where there are nearly 19,300 teachers, there were 17,191 students in the summer schools, and 12,171 were taking courses in education—presumably already teaching or preparing to teach. Doubtless some Oklahoma teachers were also to be found in schools outside of the state, even as far away as New York, though the splendid provision that the state is making for her own young men and women is such that it would surprise those who still think of that part of the country as somewhat primitive. The campus and buildings of the University of Oklahoma have a spaciousness and beauty of architecture surpassing many an eastern university, and the students there enjoy comparable mental advantages.

Curiously enough, Massachusetts is almost at the other end of the list, with only Montana, Connecticut, and New Jersey below her. One natural inference concerning the latter states would be that their teachers were drawn for summer courses into New York, but that does not explain the Massachusetts figure. Nor is New York's percentage so high as to suggest that her own teachers attend in as great numbers relatively as in many other states, for New York ranks

twenty-fifth in the list of percentages of teachers enrolled. It would be of interest to know what the explanation is. Do teachers in the states of lower percentages give their summers to travel or recreation or employment in other fields to a greater extent than in Oklahoma, Colorado, Alabama, and Tennessee?

Quite apart from what the summer schools are doing for teachers professionally, they are becoming great centers of adult education and, as such, are to be hailed as leaders in this newest phase of educational expansion. Moreover, in such places as New York they are bringing together men and women of maturity from all parts of the United States and so promoting an understanding between East and West, North and South, such as the casual and superficial acquaintance of mere travel cannot give. The summer-school population has grown even in the last three years, and the result is a by-product of great value. It enriches not only the student but the school to which the student goes back as teacher.

A CURRICULUM IN THE USE OF LIBRARIES

In an article published in the *Baltimore Bulletin of Education*, Angela M. Broening, supervisor of English in junior high schools and school libraries, presents items which may be adopted in making a curriculum in the use of libraries. The article is as follows:

The following outline, which was developed through actual use with pupils during the second semester of last year, will be expanded this school year into a detailed syllabus for teachers' use. The work has enjoyed the co-operation of Dr. Florence Bamberger, the staff of the Enoch Pratt Library, and the school staffs.

GOALS OF LIBRARY TRAINING GIVEN TO PUPILS

1. To help pupils use intelligently and quickly the materials available in the school library
2. To give pupils practice with useful and economical techniques of classifying, filing, and indexing materials contributed by the class
3. To arrange situations in which pupils will need to use, in the public library, the skills developed under teacher guidance in the school library
4. To relate classroom and school library activities
5. To have the school library function as a stimulus to pupils' developing varied reading interests
6. To generate in pupils the power of self-education

GRADE PLACEMENT OF SKILLS TO BE DEVELOPED

Grade I:

Acquaintance with the library as the room in the school which has books and pictures helpful in the activities of the classroom, playground, and so on

Introduction to simple rules for the hygienic use of books

Finding the section of the library where books suitable for the first-grade pupils are shelved

Grade II:
- Learning how to get the librarian's help in finding books of reference as well as books for recreational reading
- Introduction to the system by which books are arranged in the library
- Experience in finding books for one's self by reading shelf labels

Grade III:
- Finding books on shelves by subjects, using title-page, illustrations, and table of contents as bases for choosing books from section
- Training in how to withdraw books from library
- Experience in browsing in periodicals suitable for the child of this age

Grade IV:
- Training begun in making bibliography
- Continuation of use of table of contents and title-page, adding preface, index, and list of illustrations in discussing suitable books
- Practice in recording author, title, and name of subject section where books are found
- Consulting bulletin board arranged by subject only
- Withdrawing books
- Using periodicals on special subjects
- Use of index to fairy tales
- Use of abridged dictionary

Grade V:
- Bibliography prepared through use of table of contents, title, index, preface, list of illustrations, charts, graphs, maps, cross-references. Pupils to record author, title, publisher
- Consulting lists from bulletin board, giving call number which is identified with subject section of books on shelves
- Use of anthologies of poetry; of index to first line of poetry
- Use of unabridged dictionary

Grade VI:
- Training in use of card catalogue
- Pupils to record call number, author, title, publisher, subject
- Use of encyclopedias and almanacs

Grade VII:
- *Reader's Guide*, card catalogue, and book lists as means of gathering bibliography
- Use of gazetteers, large atlas

Grade VIII:
- Use of local newspapers, government publications, and special subject periodicals, e.g., *National Geographic*, *Economic Geography*, *United States Daily*, *World News*

Grade IX:
- Out-of-town and foreign newspapers
- Municipal publications

Grade X:

Training in use of varied sources in preparing a bibliography: *Book Review Digest; Reader's Guide;* card catalogue; library-committee lists; lists from publishers, teachers, and students

Grade XI:

Who's Who; all periodical indexes, e.g., *International Index, Dramatic Index, Reader's Guide, etc.*

Grade XII:

Making a bibliography of periodical references with recognition of the editorial policy of the periodical and the edition of the newspaper

PLANS FOR THE TRAINING OF TEACHERS IN SERVICE ORGANIZED BY TEACHERS' ASSOCIATIONS

The Brooklyn Teachers Association has arranged for the benefit of its members and others who may be interested a series of demonstration lessons to be given in different sections of the city. The *New York Sun* describes the plan as follows:

All the demonstration lessons are to be given in the auditoriums of the respective schools, with classes present. The regular teacher of the class will conduct each lesson and proceed with the class routine exactly as called for in her daily plan book. All lessons will begin promptly at four o'clock and will end at 4:35, after which the class will be dismissed. The next twenty minutes will be devoted to a discussion by the visitors of the lesson plan under the leadership of a chairman. Guest teachers will be permitted to ask questions regarding the lesson.

All teachers and supervisors of any grade and in any part of the borough will be admitted to the demonstration lessons, which have been arranged for different sections of Brooklyn so that the centers will be readily accessible to all teachers.

Commenting on the plan for the presentation of the lessons, the October issue of the *Brooklyn Teacher*, official bulletin of the Brooklyn Teachers Association, says:

"Cleveland, Detroit, Trenton, and other cities have their demonstration centers under the direct control of the Board of Education. Our city has not as yet adopted any plan whereby teachers may witness a lesson carried out from beginning to end under conditions as they are met daily in the classroom, with pupils present. The Brooklyn Teachers Association has been studying this problem for over two years and is glad to announce a schedule that will be developed and enlarged, should the venture prove successful.

"There is very little opportunity for teachers at present to see a lesson of thirty-five or forty minutes in its entirety. Courses of study and lectures present the theory of instruction and class procedure, but there are few opportunities of presenting the management and the teaching of a class. The plan has been

submitted to several principals and district superintendents, all of whom have unqualifiedly approved it as a means of assisting teachers in their work and giving them a conception of good class management and procedure."

A somewhat different method of presenting model lessons was adopted in Illinois, as indicated by the following statement issued by the Bureau of Education.

Stenographic reports were made of a series of lessons for elementary grades prepared under the supervision of the efficiency committee of the central division of the Illinois State Teachers Association during the years 1925 to 1927. The lessons illustrate the teaching of reading, geography, nature-study, language, and arithmetic. The reporting was done by expert stenographers, and precautions were taken to prevent retouching the lessons. The lessons were thus reproduced verbatim as they were given in the classroom; they were published in pamphlet form by the Public School Publishing Company, Bloomington, Illinois.

STANDARD CHARTS FOR TESTING VISION

School physicians and public-health nurses whose duties include testing the eyes of school children will be interested in two standard Snellen's vision charts which have been published by the National Society for the Prevention of Blindness to end the confusion due to the multiplicity of such charts. One is the regular letter chart; the other is the "Symbol E" chart, by means of which the vision of preschool children, kindergarten children, and those unable to read may be tested. Both charts are drawn to the foot scale.

Each chart is accompanied by a copy of "How To Test for Visual Acuity," which is reprinted from the recently revised edition of *Conserving the Sight of School Children*, a report of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. The charts are printed on rolled linen and may be obtained at the cost price of twenty-five cents each plus shipping charges from the National Society for the Prevention of Blindness, 370 Seventh Avenue, New York City.

CITIZENSHIP INSTRUCTION IN ELEMENTARY SCHOOLS

The Minneapolis public-school system has issued a pamphlet on the teaching of citizenship in elementary schools prepared under the direction of the Instructional Research Department. Elizabeth

Hall, assistant superintendent of schools, has enunciated in the Preface of this pamphlet a view with regard to character-training which is so explicit and clear that it challenges attention. Miss Hall defends the position, which is accepted in many quarters, that training to be effective must be direct, particular, and practical. She says:

> Character-training has always been recognized as one of the major objectives in education. The problem has been how to secure results—immediate, recognizable results.
>
> The method commonly employed may be called the "indirect method." Stories and poems with fine moral content were read to children. Many reading books contained similar material on the child's reading level. Biographies of men and women whose lives portray lofty and lovely virtues were sketched for them. Wise precepts were memorized. The best available from the arts was given to them—pictures, music. All these are rightfully the child's heritage and must ever remain a vital part of the curriculum. No one can say how many children have been influenced and inspired by story, poem, or song.
>
> But this program did not result in better behavior, better citizenship, as was anticipated. It was evident that a more direct attack must be made upon this most important problem. It was recognized that desirable personal and social habits must be formed, as all habits are formed, by practice. Opportunities for pupil co-operation, pupil participation, pupil responsibility called for new organization. Obedience, docility, and conformity were not enough. Situations calling into play the active virtues independence, self-reliance, and originality were demanded.
>
> For several years the elementary schools of Minneapolis have been working out various programs for training in citizenship, all based upon the principle just stated. It seemed desirable, at this time, to restate our problem and to gather together some of the most successful of our experiences for the benefit of teachers new to the system and to serve as a basis for future programs.
>
> This bulletin, then, is simply a milestone on our journey toward a more satisfactory solution of this problem.

It is interesting to note as one examines the pamphlet in detail that its authors have used as the headings of the various sections such terms as "reliability," "co-operation," and "obedience." These general terms seem to be more than mere names. They seem to be guiding principles which all good citizens must understand and adopt. They certainly are not the names of particular habits. Does it not seem clear that there is a place in the curriculum for broad general teaching, for generalization as well as for training in proper adjustment of one's conduct to particular situations?

A CHAPTER FROM THE HISTORY OF TEXTBOOKS

The *Christian Science Monitor* published the following account of the "oldest arithmetic in America."

It is a little book, brown and thumbed, bound in vellum and tied with buckskin thongs. It is the oldest arithmetic in America. Wedged inconspicuously among its fellows is found this ancient volume in the Garcia Library of the University of Texas.

Only thirty years after the landing of the Pilgrim Fathers, this little book came into being.

It was first published in the winter, December 17, 1649. Contrary to what might be the general opinion, its birthplace was not in cultured, tradition-bound New England. It was printed in Mexico City. The American activity of the printing press began in Mexico about the year 1539, according to Louis C. Karpinski, of the University of Michigan, in an address before the American Association for the Advancement of Science at Kansas City recently. From this press issued at various times a work on the value of gold and silver, a treatise on astronomy, a scientific discussion of arithmetic and algebra, and even a systematic textbook on arithmetic, but few, or none, of these original works are extant.

The little volume in the Garcia Library was the second textbook on arithmetic to be printed in the New World. It was compiled by Atanasius Reaton and was known as *Arte Menor de Arismetica*. Not until recently was it known that a copy of this book was still in existence. The librarian of the Garcia Library, perhaps the finest collection of Mexican documents in the world, called Professor Karpinski's attention to the systematic textbook on arithmetic, which is among the rare volumes of the collection.

The work is dedicated to Pedro de Soto Lopez, official accountant of the Tribunal of the Inquisition of New Spain. The approbation of Martinez de Zuireta, accountant, representing the Visitor-General of the Holy Inquisition, is given. The license, based upon the approval, was duly issued on December 17, 1648.

In the Preface Reaton states that twenty-one years before he had prepared a book on arithmetic and geometry for which license to print had been granted. However, the difficulties of printing in the New World induced him to send the book to Spain. But the venture was a failure, and the book was not printed.

The Table of Contents shows separate chapters devoted to the four fundamental operations of addition, subtraction, multiplication, and division, even as in modern arithmetics. Turning to these chapters, one finds that the first three operations are treated in methods similar to modern ones, with a difference only in the process of division.

Apparently fractions were as difficult to master in olden days as today, for in this book seven chapters are devoted to their treatment. The formation of military companies occupies a large chapter. This reveals the warlike inter-

ests of the people. The companies are formed in squares, hollow squares, hexagonal formation, and in other strange geometrical forms.

"Historically, the most interesting section is the final chapter," declares Mr. Karpinski, "which treats in detail the method of distribution of the income (tithes) received by the Mexican churches. Application is made to the income (assumed) of the Cathedral of the Puebla de los Angeles. This minute account of the allocation of the considerable funds received by the churches of New Spain presents material probably not found in any historical work and yet of the greatest historical value in the discussion of the Spanish Empire in America, where the priests played so large a rôle.

"This arithmetic is indeed a precious document in the history of science in America, revealing a breadth of interest in arithmetic not to have been expected in Mexico at this period."

EMPLOYMENT AND SCHOOL ATTENDANCE

The *Manchester Guardian*, one of the most widely read and influential daily papers in England, includes in an editorial on unemployment a comment which is of profound educational significance. The editorial opens with an attack on the government for its failure to deal effectively with the present conditions of unemployment.

After referring critically to the recent efforts of the prime minister to throw the responsibility for the correction of the difficulty on employers, the editorial says:

Above all, he should reconsider the refusal of his education minister to apply at least one partial but important remedy by raising the school-leaving age by at least a year, to the great advantage of education and with no small relief to unemployment. Every year more than half a million children leave the elementary schools to swell, directly or indirectly, the army of the unemployed. Many fathers are out of work because their children, who ought to be at school, are taking their place in industry. The government should at least do their proper share in the relief of unemployment when they call on employers to do theirs.

It is not always recognized that social conditions and industrial conditions are intimately related to the movements which are recorded in school statistics. Professor H. C. Morrison has recently made the point that the rapid increase in school attendance in the upper grades and in the high schools in this country is in no small measure conditioned by the legislative prohibitions of child labor which have been enacted in the various American states.

The history of education would be far more helpful in the training

of teachers if it could be re-written with such insights into social causes as are suggested by statements made in the foregoing paragraphs.

REMEDIAL TRAINING TO CORRECT SPEECH DEFECTS

The following statement, quoted from the *Seattle Educational Bulletin*, the official publication of the Seattle school system, calls attention to a type of remedial instruction which is very important and usually very effective when it is begun early.

Of the 238 Seattle children who received training through corrective-speech classes during the last year, over 60 per cent were able to correct their difficulties. In some cases where the trouble was acute, or when training was interrupted, it has been necessary to continue the work.

Seattle is one of the few Pacific Coast cities which offer assistance through the public schools to the child who is handicapped by one or more of the various forms of defective speech, although many eastern cities have well-established departments of speech correction.

With the development, in recent years, of scientific methods of overcoming speech troubles, the necessity of placing the opportunity for such training within the reach of public-school children is being quite generally recognized.

Speech teachers call attention to the fact that in no place is the ounce of prevention more desirable than in speech work. Therefore, if a child has even incipient speech trouble, it is most important that he take advantage of the opportunity offered by the speech classes.

Three regular centers for speech-training are at present operated in Seattle. One is located at Central School, one at Cascade, and one at B. F. Day. Each corrective-speech center is in charge of a teacher especially trained for that work and serves the districts most accessible by street car, bus lines, etc.

In addition, classes have just been formed at Roosevelt High School and Alexander Hamilton and John Marshall intermediate schools. These are also in charge of teachers who are specialists in the work.

PROMOTING CLEANLINESS

The Cleanliness Institute, 45 East 17th Street, New York City, has issued for pupils in the seventh, eighth, and ninth grades a book entitled *A Tale of Soap and Water*. School administrators can secure copies for review free; copies for pupils can be purchased at the rate of $12 per hundred in lots of twenty-five or more. The book is a sketchy historical narrative of the way in which civilizations have promoted cleanliness.

One section regarding early history is typical of the book.

Now we must cross from Egypt to an island which is one of a chain of stepping-stones stretching across the Mediterranean Sea from Northern Africa and Asia Minor to Europe. This island is called Crete.

Over four thousand years ago, in the ancient Cretan city of Cnossos a mighty palace stood—the Labyrinth. People used to think that the Labyrinth was as legendary as the rest of the story which the Greeks told of King Minos of Crete and his horrible pet the Minotaur, half man, half bull, which he kept in the Labyrinth and fed once a year with Athenian youths and maidens. But in our own century people were astonished to find that the Labyrinth part of the story, at least, is true. Digging down through the rubble of three thousand years, excavators found the ruins of a stately palace with so many bewildering passages, courts, and apartments that even now it is difficult not to lose one's way. The godfather of all the labyrinths had been found.

In this palace the first bathrooms known to history were discovered. When the king of Crete felt like taking a bath, he had only to step down from his throne and enter a small bathroom connected with the throne-room. The queen had a bathroom attached to her hall in the domestic quarters of the palace. The water supply and the drainage system of the Labyrinth were remarkably complete. King Minos was undoubtedly proud of them in the twentieth century before Christ. He need not have been ashamed of them if he had been present when they were dug up in the twentieth century after Christ. So far as washing facilities and sanitary arrangements are concerned, King Minos can stretch out his hand over four thousand years and greet Queen Victoria as an equal.

ADULT EDUCATION IN MASSACHUSETTS

An article published in the *United States Daily* gives an account of the success of the Massachusetts plan of adult education. The information on which this article is based was secured from the *Labor Review* and from a statement by Senator David I. Walsh which was published in the *American Federationist.* The article is in part as follows:

In 1915 a state agency for the education of people who had passed the ordinary school age was established by law in Massachusetts. The active work of the new agency, the Massachusetts Division of University Extension, began in January, 1916. . . . .

During the first five years of its existence this university-extension scheme expanded steadily, and by 1921 approximately 30,000 persons were registering in a single year. Since then the total registration per annum has never been below that figure. Last year the enrolment was over 37,000, and it seems possible that it will reach 40,000 at the close of the current year.

Under the law the division of university extension was "authorized to cooperate with existing institutions of learning in the establishment and conduct

of university-extension and correspondence courses; to supervise the administration of all extension and correspondence courses which are supported in whole or in part by state revenues; and also, where it is deemed advisable, to establish and conduct university-extension and correspondence courses for the benefit of the residents of Massachusetts."

Before the passage of the law other states had inaugurated university-extension work as a department of their respective state universities. As a result of this connection, the work in such states was restricted. Massachusetts, with no state university, decided upon a broader scheme.

Its university extension was to mean a university without buildings, with a campus of 8,266 square miles, with hundreds of classrooms in all sections of Massachusetts, and with teachers drawn from various universities, colleges, and other institutions in the state. In addition, instructors are drafted from the ranks of professional and business men and women.

The early courses were taken by persons who needed them the most. While the average age of the students was thirty years, many of them were forty, fifty, and even sixty years old. Workers handicapped by the neglect of early education were quick to seize upon the new opportunities offered.

It was found that in those days, for the most part, the courses which had the strongest appeal were directly related to a definite vocation or trade. English, however, was the most popular subject.

The only requirement for registration is a reasonable indication that the would-be registrant is equipped to profit by the desired instruction.

More than two hundred courses, both by correspondence and class, are now available, including among them the following subjects: English, foreign languages, mathematics, government, history, industrial and commercial subjects, science, literature, mechanical and structural engineering, drawing, textiles, and home-making. Certain courses carry credit toward degrees in different colleges.

Correspondence instructors not only correct papers but also guide, counsel, and encourage their students by all possible means. These instructors are not ranked "on the number of their degrees, nor on the depth of their learning, nor on the books they have written, but on their ability to come alongside and in heart-to-heart fashion help the student to help himself."

Classes are formed in any part of the state for any group of not less than thirty persons who wish to get together for instruction in a special subject.

"Regular programs of subjects are proposed twice a year in all the principal cities and larger towns and, whenever possible, even in the smaller towns. These classes meet in the schools and other public buildings through the cooperation of local authorities.

"The first interest of many people in a program of study may be traced to its relation to their daily occupation. This is only natural. Men in shops and factories are concerned about their jobs and the possibilities of promotion.

"Recognition for promotion has frequently been based upon fitness as deter-

mined by study and preparation. University extension considers that its first responsibility is to answer the call for instruction in practical subjects."

Classes in trade and industrial subjects are frequently conducted at the factories and at local trade-union headquarters. It has often happened that university-extension classes are held for union members either before or after regular union business meetings.

Instruction fees are exceedingly small. Because of the large number of students, it is possible "to sustain the entire state program at a net cost to the commonwealth of less than $1 per student. The greater the increase of this educational activity, the lower the cost of its upkeep will be."

Residents of other states may register for the home-study courses.

In 1923, when arrangements were made for broadcasting educational lectures from Station WBZ in Springfield and subsequently from WBZA in Boston, people outside of Massachusetts became interested in the scheme, and its success was immediate.

Since then regular courses have been broadcast every year, and, in addition, text material bearing directly upon the subject of the lecture is prepared and distributed to the radio audience for a nominal sum. Furthermore, these texts include questions to be answered and problems to be worked out and talked over at home or at work. . . . .

"It is significant to note that in the early days of broadcasting, when distant reception was possible, students were enrolled from every state in the Union east of the Mississippi, with scattered enrolments from as far west as Montana. Large numbers of residents in the Canadian provinces found interest in the subjects of economics, literature, music appreciation, applied psychology, and real-estate law for home-owners, these being the courses most successfully adapted to the radio. The reactions of listeners to this type of instruction, as evidenced by the hundreds of letters sent to the university-extension office, are highly interesting."

EASTMAN TEACHING FILMS, INCORPORATED

The employment of educational experts to lay the foundations for an industrial enterprise which is to supply materials for use in schools is described in the following statement issued by the Eastman Kodak Company.

Marked superiority of class work done by children taught with films over that of children taught by other classroom methods has been demonstrated by the formal completion of the most extensive experiment ever undertaken in education. A 33 per cent gain in geography and a 15 per cent gain in general science were scored by approximately 5,500 children taught with specially prepared films over 5,500 taught the same subject material without the aid of motion pictures in a trial in public schools in twelve widely scattered cities directed by Dr. Ben D. Wood, of Columbia University, and Dr. Frank N. Freeman, of the

University of Chicago. In the middle of October the two educators finished their fifty-thousand-word report on the experiment, which was conducted over a period of ten weeks last spring.

If properly planned classroom films can raise pupils' marks by an average of 24 per cent, as in this experiment, many failures will be turned into passing marks, since the great majority of failures are by less than 24 per cent. Thus, the time required for repeating courses will be saved in many children's education, and large cost will be saved to municipalities. The average expense of keeping a child in school for a year is $100, which in Chicago, for instance, where there are 30,000 failures a year, would mean a saving of $3,000,000 a year if failures could be completely eliminated.

The experiment, representing the first time a nation-wide investigation has been made into the controversial question of the value of films in classroom teaching, was sponsored by the Eastman Kodak Company, which, as the result of the preliminary findings of Dr. Wood and Dr. Freeman last spring, established a $1,000,000 subsidiary corporation, Eastman Teaching Films, Incorporated, to prepare educational films for use from the primary grades up through graduate technical-school work. The earlier report of Dr. Wood and Dr. Freeman said: "We are making a preliminary report at this time because we believe that enough evidence is in to warrant a continuance of production of classroom films and because a delay in production until after the complete report is prepared would seriously interrupt the preparation of a film program for the schools."

SCHOOL HEALTH DAY

The following paragraphs appeared in the *New York Sun* of November 1, 1928.

Today is School Health Day in the city schools. Academic work was suspended in every classroom so that pupils might be tested and observed by their teachers for easily discoverable physical defects. With such defects recorded, a follow-up campaign will be conducted by teachers, school physicians, and school nurses, who will see that corrective measures will be taken wherever possible.

Superintendent of Schools William J. O'Shea, in his official instructions to district superintendents and principals, pointed out that, in order to obtain a maximum degree of improvement in the health of the pupils, it is essential that the children themselves be made to realize the importance of a sound mind and a healthy body.

The pupils today were tested for acuity of vision, defective hearing, defective teeth, obstructed nasal breathing, malnutrition, and any other evident physical defects. A record will be kept of the physical condition of every student to be used in the follow-up work. The height and weight of each child also were taken wherever facilities for such examinations existed.

Following the examinations, teachers were instructed to make summaries

of the physical defects found and to file them in the principal's office. The principal, in turn, will furnish the school medical inspector with the names of all pupils found to have defects of vision or hearing. The results of the doctors' examinations will determine the pupils whose names will later be referred to the inspector of sight-conservation classes and to the School for the Deaf. School nurses will be given the names of children suspected of defective nasal breathing and defective nutrition. The nurses will then refer aggravated cases to the medical inspector. Children with evident defects of teeth will be referred for dental treatment to their family dentists.

OVERSUPPLY OF CANDIDATES FOR TEACHING POSITIONS

From all parts of the country reports are received indicating that there are many persons who have completed training courses in normal schools or teachers' colleges and cannot find teaching positions. In New York City an association has been formed by about five hundred unemployed holders of License No. 1 known as the Association of Unappointed and Unemployed Teachers. This association has presented to the Board of Education eight suggestions which it believes should be adopted. The suggestions are as follows:

1. At this crisis it is advisable, we feel, that the Board of Education limit the examination for License No. 1 and substitute licenses to men and women of New York City only.

2. Let teachers resign and be able to return within a period of five years without taking an examination. This, it is expected, will induce many married women to leave the system temporarily.

3. Assign a substitute to assist principals of schools having from forty-one to forty-eight classes. This is said since a principal cannot have an additional head of department until there are eighty classes. The same for schools of sixty to seventy-nine classes, because a principal cannot have a third clerk until there are seventy-five classes in the organization and another head of department until there are eighty classes.

4. Teachers should be encouraged to take sabbatical leaves so that their places may be filled by substitutes.

5. A system should be installed whereby alternate substitutes would be employed in long-continued vacancies, as, for instance, maternity leaves, sabbatical leaves, leaves of absence for a term, thus giving all some opportunity for employment and service.

6. For slow classes having registers of over thirty-five children, assignment of a substitute for every five such classes would provide additional instruction for this slow group of children.

7. It has been suggested that some plan similar to that employed in the high schools be devised in the elementary schools. A teacher-in-training is em-

ployed for every fifteen classes in the high school. By this provision a large number of high-school substitutes have been able to secure employment. Would it not be possible to arrange for the employment of teachers-in-training in the elementary schools, say, for instance, one teacher-in-training for every twenty classes?

8. Afternoon centers—Would it not be advisable to have one regular teacher where only one is necessary, but, where additional teachers are necessary, to employ substitutes?

These suggestions make it clear that those who have prepared themselves for the teaching profession in New York City believe that the community should be held responsible for their employment. It is also perfectly clear to one who looks at the situation in a disinterested way that the present purely accidental registration of students in teacher-training institutions is wholly unintelligent.

The problems suggested by the foregoing statements cannot be solved unless some central investigating agency, such as the Bureau of Education, makes a thorough study of the supply and demand in the field of teacher-training and furnishes the enlightenment which will tend to counteract the present local institutional competitions and inco-ordinations that have brought about the situation which is acute in New York City and common throughout the country.

When a study has been made which will throw light on the problems involved, there will need to be a vigorous reorganization of the institutions which train teachers. There will also need to be legislation to determine the kind of teachers communities may employ. It is evident that teacher-training and teacher employment are not yet governed by educational science.

EXAMINATION ANALYSIS VERSUS PHONETIC ANALYSIS IN PRIMARY READING

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In the literature of educational methods relating to the teaching of reading there has been much discussion of phonetics and the methods of phonetic analysis, but little has been said which bears directly on the pupil's methods of word recognition. This article presents the writer's view as to how pupils learn to attack and to recognize new printed words independently. The writer has arrived at these views through observation of the work of successful primary teachers of reading and through discussion with them of their plans and purposes. The article is not so much a discussion of successful methods as it is the writer's interpretation of the elements of their success.

LEARNING WORDS AS SIGHT WORDS

The pupil in the first grade learns words as sight words. He learns them "at sight," as wholes, and as the teacher points them out to him. In from six to ten weeks of such preparatory instruction the pupil learns at sight from seventy-five to eighty words, and he is enabled thereby to read the first eight or ten pages in the primer. As time goes on, he continues to read, learning new words every day but learning them as the teacher points them out to him. Gradually a stock of words is acquired, and the pupil is enabled to devote more and more of his attention to the task of reading for meaning.

The pupil makes rapid progress; in fact, his progress soon becomes so rapid that the ordinary method of learning new words cannot keep pace with it. The pupil soon begins to meet new words in his reading that the teacher has not been able to teach as sight words and to meet them at times when the teacher may not be at hand to help him. At this point the strictly word method of instruction breaks down. Meeting the longer and more or less unfamiliar word, the child becomes aware of a mass of visual stimulation which

he cannot make use of nor in any wise relate. He responds to this apparently complex mass of letters in one of three ways: (1) With a complete lack of independence, the pupil turns to the teacher for help in surmounting the difficulty encountered in the new word. It is common practice to permit pupils to interrupt themselves in the reading of sentences in order to receive help from the teacher in recognizing words. (2) The pupil turns away from the new and difficult word without making any effort to determine what it might be. (3) He attempts an analysis of the unfamiliar and difficult word, which in the majority of cases leaves him floundering in a period of confusion.

The number of pupils who fail to make progress in the recognition of new and difficult and more or less unfamiliar words because they either turn away from them or flounder in periods of confusion is by no means small. One becomes impressed with the seriousness of the situation only as one becomes acquainted with the large number of pupils in every grade in the elementary school and high school who are failing in all their work because of their inability to cope with the difficulties involved in the mere mechanics of reading.

THE NEED FOR A NEW METHOD

The need for a new method of learning words is clear. Since the teacher cannot always be present to help in recognizing new words, a method that is quite independent of the teacher's personal guidance is demanded.

> If a child is going to be distracted by his efforts to recognize words, we may as well anticipate the difficulty and distract him to some purpose while we teach him how to master distractions.[1]

WHEN TO TEACH THE NEW METHOD

The school may undertake the task of teaching a method of attack on new words at any one of three separate times, namely, before the children begin to encounter the difficulties presented by new words, in the midst of the difficulties met, and after the children have encountered many difficulties and have had their developing

[1] Charles Hubbard Judd, *Reading: Its Nature and Development*, p. 62. Supplementary Educational Monographs, Vol. II, No. 4. Chicago: University of Chicago Press, 1918.

reading abilities greatly modified by such difficulties. Common sense would seem to eliminate from consideration the second and third times. The children who are able to bring to bear on new words a method of attack or at least an idea of method have a decided advantage over those children who are totally bewildered in the presence of new words. The school should undertake the teaching of a method of attack on new words before the children begin to meet many new words in their reading lessons.

HOW TO TEACH THE NEW METHOD

If a new word is not learned "at sight," as a whole, and by being named by the teacher, it is mastered through the process of analysis. Records of eye-movements show that young children read analytically. They read analytically because they do not have complete mastery of their words. The method of mastering any difficulty, either in child life or in adult life, is through analysis of the difficulty and intelligent attack on each phase of the difficulty the analysis reveals.

> Analysis of words cannot be omitted from any complete training of pupils. The experience of schools in this matter is unequivocal. A child can read without analysis so long as his vocabulary is small and the words are short, but sooner or later he must make analyses, and then he will be greatly helped if he has been trained in systematic methods. As to the time when this analysis should be introduced, it seems to be suggested by the dominance of oral language at the beginning of school life that the word unit be accepted at first and analysis be introduced later when it is needed to keep the word units clear.[1]

Thus, analysis being the method of attaining a mastery of new words, it is clear that the school faces the problem of teaching *proper methods of analysis*.

DISTINGUISHING BETWEEN RESULTS AND MEANS

Analysis is but a means to an end. It is not enough to teach children how to analyze words. Many children may become proficient in the analysis of words without at all understanding why analysis is undertaken or how analysis is to be used. Children must be taught by means of word analysis how they should proceed in the

[1] *Ibid.*, p. 141.

presence of new words. Analysis must be taught and practiced until every child catches the idea. Some children are able to grasp the idea through little training and practice in analysis, whereas some need two or three times as much training and practice before the idea is grasped. Word analysis is the means; an idea of procedure is the outcome sought.

PHONICS OR NO PHONICS

The discussion of word recognition up to this point indicates that the question of phonics or no phonics is not a matter of concern to the primary teacher of reading. To avoid misunderstanding of this statement, an explanation may be made.

There are a few pupils in nearly every well-organized first-grade room who, after they have been systematically instructed in attaching meanings to printed words and have had some practice in reading for meaning, are able in the presence of a new word to recognize the similarity between it and words they already know. An occasional first-grade pupil is bright enough, wide awake enough, and discerning enough to recognize the similarity between the new printed word "mill," for example, and such words as "man," "mat," "milk," and "mid" and "hill," "till," "fill," and "will," which are already familiar. With such recognition goes the ability to make a shrewd guess as to the sound of "mill." If the pupil is reading attentively for meaning about the man who takes his corn to a place to be ground into meal, for example, and if, in addition, the word "mill" is part of his speaking vocabulary, the shrewd guess that is made is checked up and corrected. The new printed word "mill" is recognized by the pupil independently of any ability or lack of ability to give the sounds of the phonograms *m*, *i*, and *ll*.

Other first-grade pupils are able to recognize the similarity between new words and words they already know as a result of slight suggestion on the part of the teacher and of a moderate amount of practice in making such comparisons. There are other pupils, found in considerable numbers, who are unable to grasp the idea that similarity can exist between words until the matter has been called to their attention repeatedly through the employment of a variety of devices.

Should phonics be taught? How many phonograms and what blends should the children be required to learn? These are not the questions of major concern. The first-grade teacher is concerned primarily with being certain that every pupil has the correct notion about how to attack new words and enough information about sounds to check the results of his attacks. As indicated in foregoing paragraphs, a few pupils may develop the idea somewhat independently; other pupils need slight suggestions and practice in order to grasp the idea; and other pupils need instruction in considerable amount. Accordingly, the careful first-grade teacher will organize and conduct in varying amounts instruction in methods of analysis for all pupils, teaching each pupil about sounds and blends until he has the correct idea of procedure and enough practice in using the idea. As indicated, some pupils need very little instruction; other pupils need a great deal. Some pupils with a small amount of practice can establish the fact that they are able to attack new words independently; other pupils require practice day after day and month after month before one is justified in entertaining the slightest hope that they are becoming independent.

Pupils must learn to attack two kinds of words, namely, words of one syllable and words of more than one syllable. In the first grade they must learn how to analyze words into their letter elements;[1] in the second and third grades they must learn how to analyze words into their syllables. This article will deal only with the method of attack on one-syllable words.

ATTACKING WORDS OF ONE SYLLABLE

Enough has been said about analysis as a means to an end to make it clear that children should learn to analyze one-syllable words into their elements for purposes of recognition, not for purposes of pronunciation. For example, if "mill" is a new printed word and is unrecognizable as a whole, the children should be able, as a result of their instruction, to give attention to its parts, not for the purpose of sounding *m, i, ll,* not even for the purpose of recognizing each

[1] This does not mean to spell the word or to sound its parts. It implies an analytical recognition, not an analytical sounding, of the monosyllables that are not familiar enough to be recognized as wholes.

individual sound if such were possible, but for the purpose of determining how the parts blend to give the sound "mill." It is enough to recognize the short sound *i;* how the sound *i* begins, as in "man," "met," and "mid"; and how it ends, as in "fill," "tell," and "hall." Instruction in analysis should lead the children to an analytical examination of new words, not to an analytical sounding of them. To this end the following general principles should be kept in mind.

1. Learning a method of analytical examination of printed words proceeds from that which is known to the related unknown. There must be a known element in the process. The known element is the printed words with which the pupil is already familiar. Familiar printed words are, accordingly, the basis of the instruction.

2. The nineteen vowel sounds should be taught. The common vowel sounds should be taught first and should receive the major emphasis. It is estimated that approximately 60 per cent of the words of one syllable have short vowel sounds, that approximately 10 per cent of such words have vowel sounds made long by final *e*, and that another 10 per cent have vowel sounds made long by digraph, as in "paid" and "cried."

3. The vowel sounds should be taught in their natural settings of controllers and modifiers; that is, words the printed forms of which are already learned should be used as the basis of instruction. Only in this way can the influence of the controllers and modifiers of the vowel sounds be recognized and understood. This means, moreover, that no attempt should be made to teach in isolation the unnatural consonant sounds, the fact that consonants in isolation may be sounded being conceded for the moment. Examining the words they know, the children should be taught to recognize in each word the characteristic sound—the vowel—and how it begins and ends—the influence of the consonants.[1]

[1] The writer holds that, with the possible exception of *f*, *h*, *s*, *th*, *wh*, and *z*, the consonant sounds, if there are such, are extremely difficult, if not impossible, to give. They are so extremely difficult for the adult as to raise serious doubts whether they can be taught as such to first-grade children. The writer leans to the view that the consonants are for the most part not separate sounds in a monosyllable but the modifiers and controllers of the monosyllable sound. For example, the words "bad" and "cat" have the same characteristic sound, short *a*. The words sound differently not because *b* and *d* add to the sound in the one case and *c* and *t* in the other but because the common

4. Common elements should be studied through a comparison of printed words already learned. The elements to be studied are the vowel sound, how it begins, and how it ends. The following comparisons of familiar words with respect to beginnings, fundamental sound elements, and endings are suggested: (1) words with the same beginning, the same fundamental sound element, and different endings; (2) words with different beginnings, the same fundamental sound element, and the same ending; (3) words with different beginnings, the same fundamental sound element, and different endings; (4) words with the same beginning, different fundamental sound elements, and the same ending; (5) words with the same beginning, different fundamental sound elements, and different endings; (6) words with different beginnings, different fundamental sound elements, and the same ending.

The following groups of words illustrate, respectively, the suggested comparisons:

1. cat, can, cap; hill, hit, him, his; etc.
2. can, ran, fan, man; hill, till, fill, will; etc.
3. bad, cat, man, tap; men, bet, tell, went; etc.
4. bad, bed, bid, bud; cat, cut, cot; etc.
5. fat, fell, for; pan, pig, pull; etc.
6. hat, bet, lot, nut; man, hen, tin, sun; etc.

Many similar comparisons should be made. The purpose is to encourage analytical inspection of the words, not analytical sounding.

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sound, short *a*, is begun and ended differently by the vocal apparatus. To illustrate, the sound of a word may be likened to the flow of water through a faucet. The flow of the water is governed by the amount and the pressure of the water running through and also by the way the faucet is opened and closed. Opening and closing the faucet have a profound influence on the flow of the water provided there is water in sufficient amount and pressure to run through. So with the sound of the word. The sound of the word is governed by the sound of the vowel and also by the way the vowel sound is started and stopped. Starting and stopping the vowel sound have a profound influence on the sound of the word provided there is a vowel present to contribute the sound. If the water is taken away from the faucet, opening and closing it have no effect. If the vowel is taken away from a monosyllable, the consonants that remain produce no sound. Attempting to sound the consonants by themselves results in sounds such as *b*(*u*), *d*(*u*), *c*(*u*), and *t*(*u*).

5. Words should be sounded as wholes. The blend to be learned is the blend of every part of the word. The form of analysis which encourages the pupils to pronounce "cat" *ca-t(u)* is quite as reprehensible as the form of analysis which encourages the pronunciation *c(u)at.*

6. The pupils must learn how to apply the method of analytical examination in attacking new printed words. When the pupils have learned the similarities and differences of familiar printed words through sounding them as wholes in such comparisons as have been suggested, they should be led to try out their knowledge with new printed words. Recognition of the similarity of the new word and the words they know and of the similarity of the word and its spoken counterpart is the key to success in attacking the new word.

APPLICATION OF THE METHOD

The final outcome of instruction in the analytical examination of printed words should be a high degree of both independence and precision on the part of the pupil in recognizing new printed words. How is the pupil to attain both independence and precision? If the pupil is permitted to apply the newly learned method of attack on new words independently, the results of his efforts may be anything but accurate; whereas, if the teacher insists on accuracy, she may find that accuracy is secured at the price of the pupil's independence. For example, the comparison of "dear," "fear," and "near" may lead the pupil who proceeds independently to an inaccurate recognition of "wear." The teacher instead may step in with a correction and thus lead the pupil to the correct recognition of "wear."

The latter is the common practice among primary teachers. Recognizing the inclination of the pupil to apply the method of attack mechanically and to sound "wear" like "dear," "fear," and "near," the teacher assists in the recognition by giving "wear" its correct pronunciation. Thus, the teacher does more than to help with the pronunciation of the new word "wear." She destroys, at least in part, the effects of the pupil's earlier comparison of the known words by setting up a doubt in his mind as to the application of what he has learned. When the pupil meets another similar new

word—"tear," for example—he is in doubt whether to sound it like "dear," "fear," and "near" or like the exception the teacher has pointed out.

Thus, when the pupil has learned a method of attack on new words mechanically and applies the method mechanically, he is either independent at the risk of being inaccurate or accurate at the expense of his independence. Either result is imperfect and unsatisfactory.

The dilemma thus described adds weight to the fact which has been referred to again and again in discussions of reading, namely, that a wholly mechanical method of learning to read breaks down at some point eventually. It serves to emphasize the fact that the teacher who relies wholly on a mechanical procedure is guilty of a serious blunder. The primary teacher who would be successful must come sooner or later to the decision to teach the pupil to rely on every available means at his command in the recognition of a new word. A method of attack on words is taught to the pupil because the means at his command, being inadequate for the purpose, need supplementing. In learning the method, he should learn not to fail to rely on the means already available. The new method is intended to be used not as a substitute for the powers the child already has but as a supplement to these powers.

Unfortunately, the English language is not entirely phonetic; any mechanical method of attack on it is therefore imperfect. On the other hand, it may be considered the pupil's good fortune that the language is partly unphonetic, because he is thus required, through the imperfections of the mechanical method of attack he must bring to bear on it, to resort to the latent power at his command for the recognition of words, to make use of his new method of attack at the time and place he actually needs to use it, and to deal with his reading as though it were a thought process as well as a process of mere word recognition.

The latent power at the command of the pupil for the recognition of printed words is his familiarity with the corresponding spoken words. He cannot be expected to attack successfully a new printed word which is not in his speaking vocabulary because he has no

knowledge to fall back on in order to check the result of his efforts. Since he must turn to the teacher to confirm or to correct his result, he may just as well be told the word in the beginning. If, on the other hand, the new printed word is a familiar word in his speaking vocabulary, he has at his disposal not only the means of checking the result of his attack on the word but also a very material aid in attacking the word. Accordingly, the words the pupil will meet in his earlier reading books should be as nearly as possible the words that are in his speaking vocabulary. Moreover, he should be taught to attack the new printed word not only mechanically but thoughtfully; that is, when he is led to attack the new printed word, he must be required to check the result of his efforts not by turning to the teacher for help but by comparing his result with the known spoken counterpart of the printed word. Later, when he has learned to use the dictionary, he will be able to check the result of his efforts to attack a new printed word which is not in his speaking vocabulary.

The pupil should be taught to make use of his new method of attack at the time and place he actually needs to use it. There is no object in attacking a new printed word in isolation. Ordinarily, the new word is not met except in context. Consequently, the pupil should be taught how to attack the new word only when it appears in context. "Wear" in isolation may just as well be pronounced like "dear," "fear," and "near" so far as the pupil is concerned. When "wear" appears in the following sentence, however, "The kittens *wear* coats of fur," the pupil's mechanical attack is aided by the context in which the word appears. "Tear" in isolation is indefinite even to the adult. Any attack on it is confusing. There is no mistaking the word, however, when it appears thus: "Fold the paper, but do not *tear* it" or "A *tear* rolled down his cheek."

Finally, the pupil will be able to secure the full benefit of having learned a method of attack on new printed words only when he is reading thoughtfully and not merely pronouncing words either aloud or to himself. The mechanical method of attack has only a limited application, as we have seen. The thought of the selection, if the pupil is getting it, helps materially in the recognition of the new printed word.

SUMMARY

1. Pupils in the first grade need to be taught a method of attack on new printed words.

2. The method to be taught is the method of analytical examination, not the method of analytical sounding. The latter is not merely fruitless; it is impossible.

3. Pupils learn to examine new printed words through the type of examination of familiar printed words which calls particular attention to letter elements but not sound elements.

4. Application of the method of attack should be made in accordance with the following suggestions: (*a*) The pupil must be led to check the result of his examination of the new printed word against its familiar spoken counterpart. He must be told the word when it is not in his speaking vocabulary. (*b*) New printed words, on which the pupil is to practice the application of the method he is learning, must be presented in meaningful sentences, never in isolation. (*c*) The mechanical method of examining new printed words must never be emphasized to the point where it overshadows the thought-getting phase of the reading process. The thought of the selection helps in the recognition of the new word quite as much as does the mechanical means of attacking it.

THE FUNCTION AND THE VALUE OF A DEMONSTRATION SCHOOL

W. VIRGIL SMITH
Summit Demonstration School, Seattle, Washington

Beginning with the school year 1926–27 one of the regular schools in the Seattle system was organized as a demonstration center for the purpose of exemplifying approved educational principles and teaching techniques. The keen professional interest shown by teachers and principals in the demonstration classes held the previous year by the Department of Primary Methods gave assurance that a school designated for this purpose would be approved by the corps at large.

No attempt was made to select a school which presented conditions more favorable to teaching than those to be found in other schools in the city. The plant and the equipment are not modern. Moreover, the pupils who attend this school by no means represent a select type, being drawn from widely varying social groups both foreign and American.

> It was particularly desired not only that the school selected for demonstration purposes should be centrally located and easy of access from all sections of the city but that it should also be typical of all the elementary schools of the city in the sense that it presented all the major problems which confront the great majority of the teachers. . . . .
>
> The plant has no advantages which are not found in practically all elementary schools. The building is of frame construction, and the equipment is that which is standard for the whole city. The number of pupils per teacher conforms to the standard for all elementary schools. As far as it is possible to control the material conditions of instruction, they are representative of those found in any Seattle elementary school.[1]

From the beginning so many demands were made on the school for various types of work that it became necessary to define clearly the limits and the scope of the activities in which the school would engage. Many mooted educational principles and procedures remained to be verified through trial in the classroom. Should the

[1] *The Triennial Report of the Public Schools, Seattle, Washington (1924–1927)*, p. 58.

school experiment? Curriculum-making and curriculum revision were engaging the time and the attention of every school system that would keep abreast of educational thought and practice. Would work along this line be the most profitable? Finally, many educational principles and procedures that had passed the experimental stage were not meeting with universal acceptance in the classroom. In the educational field, as in other lines of human endeavor, practice is usually many years behind demonstrated theory. Should the school, therefore, largely confine its endeavor to placing a workable

TABLE I

SUMMARY OF REPLIES FROM FOURTEEN CITIES REGARDING THE TYPES OF WORK DEMONSTRATION SCHOOLS EXEMPLIFY

	Number of Schools
Class work exemplifying educational principles and methods approved by the school system	14
Curriculum-making or curriculum revision	2*
Experimental	1
Other types:	
Activities	2
Assembly programs	1

* Only one of these schools reported that its main purpose is to make and to test new courses of study; the other school reported that it engages only incidentally in revising the curriculum.

interpretation on such progressive educational procedures and practices as have received the sanction of the system?

Leaving the first two types of work mentioned to be carried on largely by other agencies, the school decided to confine its endeavor mainly to the third type. It was felt that the greatest good would accrue to the school system by limiting the activities of the demonstration center largely to putting into operation the recently revised courses of study and to attempting to exemplify through classroom work methods and procedures that receive the approval of the administration.

For the purpose of determining practices in other demonstration schools, reports from fourteen cities operating such schools were secured. The replies are summarized in Table I.

Some of the individual replies shed additional light on the work of these schools.

1. Any type particularly desired by the system.
2. Other schools may experiment.
3. Our problem is one of method.
4. Supposedly better methods in known fields of activity.
5. Our motive is improvement of teachers in service.

It seems to be the common practice to confine the work of demonstration schools to that mentioned most frequently, namely, putting into operation the accepted educational principles and methods of the school system.

When consideration is given to the great number of educational principles which are fundamentally sound and which have been experimentally proved workable but which have not been generally incorporated into classroom procedures even in the most progressive school systems, a vast and fruitful field of endeavor lies ahead of any demonstration center which confines its activities to an exemplification of such of these principles as the school system stands for. As previously stated, the work of the demonstration school in Seattle, the Summit Demonstration School, has been of this character. The present courses of study reflect many of these modern trends in educational thought. The point of view of these courses of study is further emphasized by the following statement of principles for the guidance of the work in the elementary schools.

The Seattle school system is committed to the following program and stands for its active development in all elementary grades.

1. Further improvement in both silent and audience reading. . . . .
2. The intelligent use of problems and projects in the study of social subjects.
3. The free use of suitable activities—dramatic, graphic, constructive—to make all studies of human relationships concrete, real, and meaningful. . . . .
4. The adaptation of formal drill, as in arithmetic, place locations, spelling, language forms, etc., to individual needs in substitution for mass drill; and the handling of both this work and factual review work so that each individual of the class will be suitably occupied all the time.[1]

The work of the demonstration school has, in the main, consisted in an attempt to give expression through approved classroom procedure to the spirit and the purpose of these courses of study and of this statement of principles for the elementary schools.

[1] Formulated by F. E. Willard, assistant superintendent of schools, Seattle, Washington.

To mention all the problems that have arisen in this connection would carry us beyond the limits and the scope of this article. A few of the types of work that engage the efforts of the school will be suggestive of the problems with which the school is confronted:

1. To carry on an extensive reading program and still secure the benefits that are the result of intensive training in special reading abilities.

2. To provide for the teaching of arithmetical processes through life-situations.

3. To have all drill work on an individual basis and where there is a recognized need for it.

4. To determine the use of technical grammar and to provide for its teaching through a functional approach.

5. To provide for individual differences through supplementary projects instead of segregation where to segregate would result in a marked difference in social and physiological age.

6. To provide an opportunity for children to get the normal experiences of children of their age where such is lacking, these experiences to be used as the point of departure when invoking the doctrine of "children's interests in school work."

7. To indicate the relative place and function of formal materials of instruction and activities.

8. To show the need for having the teacher determine the desirable outcomes of any given unit of work in order that she may intelligently direct the pupils' activities.

9. To interpret the teacher's rôle in seeing (*a*) that only worthwhile experiences are engaged in, the children being prevented from spending their time on relatively unimportant aspects of their environment, from which they gain only superficial values; (*b*) that children do not direct their efforts entirely to the physical and manual aspects of creative work and neglect the mental aspect; (*c*) that activities are so selected and graded that children are led to participate in experiences and intellectual endeavors on progressively higher levels.

Teachers' meetings have been the most commonly approved means of acquainting teachers in service with the accepted methods and procedures of the school system. To obtain expressions of opin-

ion from visitors as to the value of demonstration work and to secure suggestions for improving the procedure in conducting demonstration work, the following questionnaire was sent to teachers and principals who had visited the Summit Demonstration School and observed classes at work.

1. Indicate the values that demonstration classes have over discussions of classroom practices and procedures in teachers' meetings.
2. Suggest ways of making the demonstration lessons of more value.
3. Of what value are the conferences after the demonstration lessons?
4. Suggest ways of making the conferences of more value.
5. Would you prefer informal visiting with the conference period omitted?
6. Indicate types of work that you would prefer to see.

The replies to the first part of the questionnaire indicate the relative effectiveness of teachers' meetings and demonstration lessons in acquainting teachers with approved teaching technique.

TABLE II

SUMMARY OF THE OPINIONS OF ONE HUNDRED VISITORS AS TO THE VALUE OF DEMONSTRATION WORK

	Percentage of Replies
1. Much easier to evaluate educational principles and technique of classroom procedures when they are witnessed in a working situation than when they are merely discussed or read	61
2. Reactions of pupils assist in evaluating methods and principles	51
3. Helpful to observe expert teachers develop work and handle problems which are met in regular classroom situations	16
4. Demonstrations are more inspirational	6
5. Demonstration lessons prepare way for motivated discussions	6
6. Actual classroom situations are not only more convincing but also more productive of original ideas	5

Table II, which is based on replies from eighty teachers and twenty principals, shows the values of demonstrations as compared with teachers' meetings. No separation of the replies from these two sources was attempted as they very readily fall under the same general headings.

Some individual replies from teachers and principals as to the value of demonstration work are as follows:

1. To see classes in action gives a clearer idea and leads to more lasting impressions than can be obtained by mere discussion or by reading about theory and practice.

2. Seeing a class at work gives one a better chance to compare one's own work. I gained confidence.

3. Seeing the work of an expert is far above any other method. It shows the problems of handling the children. Talk about it is theory; practice is seeing the life-process at work.

4. More helpful to see a thing done than to talk about it. More interesting to teachers. Meetings come at a time when teachers are tired from a day's work.

5. In meetings we have very little idea how the things which are discussed will work out in real practice. In demonstration classes we see modern and original methods and ideas carried out not under ideal conditions but under very ordinary conditions.

6. I remember a demonstration indefinitely.

7. Seeing actual management of work is far better than theory. Would liken a demonstration as compared with a discussion to actually seeing a picture or place and having someone describe it.

To secure the greatest good from demonstration-school work, much thought must be given to the organization and technique of procedure. Visiting teachers must be shown the type of work requested; this calls for careful planning. It is obvious that only one or two stages in a unit of work can be developed in one lesson. The demonstration-school teacher must, therefore, make clear by some other means the background and the subsequent steps of the unit on which she is working. The minds of visitors and teacher must meet on the basic principles involved; this necessitates acquainting the visitors with the principles which the lesson seeks to exemplify. The demonstration school must be certain that it is interpreting principles sanctioned by the administration. Close articulation, therefore, must exist between the demonstration school and the supervisory staff. Finally, opportunity for criticisms and suggestions must be given visitors through the conference periods following the demonstrations. Not the least of the values which have accrued to the Seattle school system are the result of suggestions made by visitors for improving the classroom technique of the demonstration school.

HOW DO CHILDREN SPEND THEIR TIME?

BRONETT GOLDBERG AND LUELLA C. PRESSEY
Ohio State University

Three years ago one of the writers became interested in an investigation[1] as to how college students actually spend their time. The results of this investigation were of sufficient interest to lead to a desire for similar information concerning school children. Accordingly, in the autumn of 1927 the study here reported was undertaken.

The method of investigation was very simple. One of the writers (Miss Goldberg) visited two different schools and asked 309 children in the fourth, fifth, and sixth grades to fill in a blank as follows:

Please write in the spaces below what you were doing each half-hour from the time you left school yesterday afternoon until you arrived this morning.

3:00–3:30 _____
3:30–4:00 _____
4:00–4:30 _____

This schedule was continued until 7:30–8:00 A.M. with the exception of the hours from 11:00 P.M. to 6:00 A.M., which were grouped into a single space with the following directions:

If you were asleep during these hours, simply write "asleep" in this space. If you were sick or awake for any reason, please tell about it.

The children were also asked the following questions.

1. What did you have for supper last night?
2. At what time do you usually go to bed?
3. At what time do you usually get up?
4. Do you do any work for money outside of your own home?

The activities of the children in each grade were classified under various headings. The number of hours devoted to each type of activity is shown in Table I. The results show chiefly a decrease from grade to grade in the amount of time devoted to sleeping, dress-

[1] Sidney L. Pressey, Luella Cole Pressey, Dean A. Worcester, and Others, *Research Adventures in University Teaching*, pp. 86–91. Bloomington, Illinois: Public School Publishing Co., 1927.

ing, and playing; an increase in the amount of time devoted to reading, helping at home, visiting, and "going places"; and a constant amount of time spent in eating, study, and school. Many of the activities were indulged in by so few children that the average amount of time devoted to them was zero; some of these activities, however, are of some interest. Thus, approximately 10 per cent of the children went to a motion-picture show on the particular day under consideration; approximately 20 per cent had to "rest"; approximately 20 per cent worked outside the home; approximately 10 per

TABLE I

DISTRIBUTION OF THE TIME OF 309 CHILDREN

Activity	Grade IV	Grade V	Grade VI
Sleeping	10.3	10.5	9.7
Eating	1.0	1.0	1.0
Dressing	1.0	1.0	0.9
Amusements*	3.0	2.9	2.4
School	7.0	7.0	7.0
Lessons†	0.5	0.5	0.5
Work‡	0.8	0.8	1.6
Social events	0.0	0.0	0.1
Miscellaneous	0.4	0.3	0.8
Total	24.0	24.0	24.0

* Includes playing, motion-picture shows, reading, and riding.
† Includes study at home and music.
‡ Includes helping at home and sewing.

cent practiced some musical instrument; and approximately 10 per cent stayed after school. In general, one may say that the average child in the upper grades in the two elementary schools slept ten hours, dressed one hour, ate one hour, and went to school seven hours; the remaining five hours of the day were spent in reading, studying, playing, working at home or elsewhere, and "going places," some of the playtime being taken for work as the child grew older.

The range in time spent in different ways is both interesting and significant. Thus, 12 of the 309 children slept less than eight hours, while 12 slept more than twelve hours. Exactly one hundred of the children spent a half-hour or less at supper and breakfast combined, while four children spent two or more hours in eating. The average amount of time devoted to play seems reasonable enough, but there

were forty-four children who played a half-hour or less and eight who played five hours or more.

The reports on the food eaten by the 309 children for their evening meals show unbalanced diets. There were only five foods eaten by any considerable proportion of the children—bread by 57 per cent, meat by 54 per cent, potatoes by 49 per cent, milk by 34 per cent, and pie or cake by 21 per cent. Of these foods, only milk contains vitamins. Other vitamin-containing foods eaten were spinach (mentioned by 5 per cent of the children), cabbage (9 per cent), lettuce (4 per cent), and tomatoes (4 per cent). Fruit was mentioned

TABLE II

PERCENTAGE DISTRIBUTION OF 309 CHILDREN AS TO TIME OF RETIRING AND OF ARISING

	Grade IV	Grade V	Grade VI	Number of Children
Time of retiring:				
7:00– 7:59	9	6	2	17
8:00– 8:59	52	30	25	110
9:00– 9:59	30	47	49	129
10:00–10:59	9	9	19	38
11:00 or later	0	8	5	15
Time of arising:				
5:00–5:59	0	3	4	7
6:00–6:59	15	17	25	58
7:00–7:59	85	80	71	244

by 15 per cent of the children, but it was usually apple sauce or canned fruit. Fresh fruit was eaten by not more than 5 per cent of the children. If it is assumed that the percentages just mentioned represent different children, a possible total of 27 per cent had fresh fruit or vegetables. Besides the 34 per cent drinking milk, 3 per cent had cocoa; 4 per cent, coffee; and 3 per cent, tea. It is evident that these children have for the most part a bread, meat, and potato diet.

The information concerning the time of retiring and of arising is equally interesting. Table II summarizes the facts. There were fifty-three children who were not in bed at ten o'clock, and fifteen were still up after eleven. If the day investigated was at all representative, approximately 17 per cent of the children in these grades keep fairly late hours.

Of the 309 children, 155 (50 per cent) work for money outside their own homes. This figure is considerably larger than that indicated in Table I, which relates to the number working on the particular day investigated.

SUMMARY

From this simple investigation it would seem that the following conclusions might be drawn.

1. The average child gets enough sleep although there are some children who do not.

2. The average child spends approximately seven and one-half hours a day in becoming educated.

3. The evening meal of the average child is decidedly unbalanced and tends to consist of starchy foods rather than foods containing vitamins.

4. The average child is just as likely to work for money as not.

CHARACTER EDUCATION IN THE UNITED STATES

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Social and economic conditions have undergone such radical changes in the last quarter of a century that new adaptations must be made by the institutions of society. Some of the changes that have made adjustments necessary are the new position of women; changes in the home and the church; the increase in juvenile crime; the change in moral standards; the failure of mere authority; and the influence of motion pictures, the automobile, and the radio.

In a junior high school in Indiana an investigation was made to determine the number of broken homes, that is, homes in which either the fathers or the mothers were missing. Of a total of 1,000 pupils, 250, or one out of every four pupils, were from broken homes. In a class of twenty troublesome boys, fifteen were without their own mothers. Statistics of broken homes for the year 1900 are not available, but such conditions probably did not exist at that time.

This one example of the change in home conditions has been given to show the radical change that has taken place in one of the institutions of society. Changes in other institutions are just as far reaching.

The modern youth has a much richer background of travel and experience than his father had. The danger is that his ideals will become as cosmopolitan and as heterogeneous as his experience. Indeed, those who are closely associated with young people in the schools find that such is the case unless there is a definite attempt to assist them in making the necessary moral adjustments.

The writer has said that "the state, through its public-school system, becomes a foe of ignorance and should just as truly become a foe of all that would endanger its institutions through the lack of character in the individual members of the state."[1] Many of the states have definitely taken the position that the state must and should use its public-school system to help develop character in the young.

[1] Elvin H. Fishback, *Character Education in the Junior High School*, p. 2. Boston: D. C. Heath & Co., 1928.

TABLE I

Character Education in the Various States and Territories

State	Reply to Question 1	Reply to Question 2
Alabama	No	Birmingham
Arizona	No	.....
Arkansas	No	.....
California	Yes	.....
Colorado	No	.....
Connecticut	No	Hartford, Bridgeport, Ridgefield
Delaware*	No	.....
Florida	No	.....
Georgia	No	Atlanta
Idaho	No	.....
Illinois	Yes	.....
Indiana†	No	Ft. Wayne, Bedford, Anderson
Iowa	No	All
Kansas	No	.....
Kentucky	No	.....
Louisiana	No	.....
Maine	Yes	.....
Maryland‡	Yes	.....
Massachusetts	Yes§	Boston
Michigan	No	.....
Minnesota	Yes	.....
Mississippi	Yes	.....
Missouri‖	.....	.....
Montana	No	Lewistown
Nebraska	Yes	.....
Nevada	No	Reno, Elko, Las Vegas
New Hampshire	Yes	.....
New Jersey	No	Newark, Woodbury, Gloucester County
New Mexico	Yes	.....
New York	No	.....
North Carolina	No	Nearly all
North Dakota	No	.....
Ohio	No	.....
Oklahoma	Yes	.....
Oregon	Yes	.....
Pennsylvania	No	.....
Rhode Island¶	Yes§	.....
South Carolina	No	.....
South Dakota	No	Watertown, Mitchell, Yankton
Tennessee	No	.....
Texas	Yes	.....
Utah	Yes	.....
Vermont	Yes	.....
Virginia	No	.....
Washington	Yes	.....
West Virginia	No	.....
Wisconsin	No	All cities
Wyoming	No	.....
Alaska	Yes	.....
District of Columbia	Yes	.....
Hawaii	Yes	.....
Philippine Islands	Yes	.....
Porto Rico	No	.....

* Character education provided for in course of study.
† State course of study in character education for the year 1928–29.
‡ Designated as citizenship training. § Very general. ‖ No reply.
¶ Character education required by law for eighty years.

An investigation was conducted by the writer to determine the extent to which the several states and territories of the United States are insisting on definite training for character. Letters were sent to all the state superintendents of public instruction. All replied except one. Many sent copies of laws, courses of study, and other valuable material.

The two questions asked were:

1. Does your state require definite training to be given in character education?

2. If there is no state requirement, in what large cities, or units, is such work given?

The results of this investigation are briefly indicated in Table I. Seventeen states, three territories, and the District of Columbia reported that they have state requirements regarding character education. Twelve states that do not have state requirements reported such instruction in many of the cities and school units. Of course, it is probable that in the eighteen states which reported no definite character-education work of any kind there are cities and other units in which such work is given.

Several excellent state courses of study in character education have been developed in the last few years. Among these may be mentioned the courses in the states of Nebraska, New Hampshire, Utah, Maryland, and Indiana.

Just as vocational education became a necessity, character education has begun to take its place as one of the important fields of training. Important experiments are being conducted to determine the efficiency of various methods of character-training. Books and visual materials are being prepared. In a few years the schools will probably agree as to the best practice regarding the teaching and training in ideals.

SUMMARY

To meet the rapidly changing conditions that affect social welfare, the public and educators themselves are looking to the schools to do more than they have done in the past to help young people make the moral adjustments that are needed by present-day living. Definite plans have been initiated in nineteen states of the United States to promote the development of personal character. The future will probably find more states taking such action.

AN EXPERIMENT WITH REMEDIAL WORK IN COMMON FRACTIONS

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In planning in San Antonio for the most effective practice in order to maintain skill in the four fundamental operations with common fractions in Grade V A after fractions had been taught in Grade V B, it seemed advisable to provide the teachers of this grade with carefully organized diagnostic and remedial material. It was thought that this material on mimeographed sheets would be more effective than the usual drill given by the teacher since (1) it is difficult to analyze the types of examples used in common fractions and such analysis requires more time than the teacher has to give to that phase of her work; (2) drills with mimeographed or printed sheets in the hands of the children are more economical of the teacher's time and of the children's time than are drills with examples to be copied on the blackboard by the teacher and then on paper by the children; and (3) the most effective drills provide for the discovery of individual difficulties and for special remedial practice rather than merely for general practice.

An analysis of the types of examples found in common fractions was made. Any type of example that differed from all others because of a new difficulty in its solution was listed separately. For instance, in the addition of fractions, the example with fractions of similar denominators the sum of which is a fraction that can be reduced was listed as different from the example with fractions of similar denominators the sum of which is a fraction that cannot be reduced, because the former contains an additional step. A check of the analysis was made by a number of teachers experienced in the teaching of common fractions.

The following examples indicate the type of analysis made.

ADDITION

Integer and mixed number: $16+7\frac{3}{8}=(23\frac{3}{8})$
Mixed number and integer: $8\frac{1}{2}+6=(14\frac{1}{2})$
Similar fractions with fraction answer not reducible: $\frac{1}{6}+\frac{3}{6}=(\frac{4}{6})$
Similar fractions with fraction answer reducible: $\frac{1}{4}+\frac{1}{4}=(\frac{2}{4}=\frac{1}{2})$
Similar fractions with integer answer: $\frac{5}{12}+\frac{7}{12}=(1\frac{2}{12}=1)$
Similar fractions with mixed-number answer, fraction not reducible: $\frac{5}{8}+\frac{1}{8}+\frac{5}{8}=(\frac{11}{8}=1\frac{3}{8})$
Similar fractions with mixed-number answer, fraction reducible: $\frac{7}{8}+\frac{5}{8}=(\frac{12}{8}=1\frac{4}{8}=1\frac{1}{2})$

MULTIPLICATION

Fraction by fraction with no cancellation: $\frac{1}{2}$ of $\frac{3}{4}=$
Fraction by fraction with one cancellation: $\frac{1}{2}\times\frac{3}{4}=$
Fraction by fraction with two cancellations: $\frac{8}{9}\times\frac{3}{4}=$

Diagnostic tests including several examples of each type revealed by the analysis were formulated and timed so that each could be finished in five minutes by an average pupil in the grade. For the timing, sixty or more cases included in slow, average, and fast groups in Grade V A were used. More examples than could be finished in the time allowed were included in the trial test, and the children were permitted to work for five minutes. The papers were scored, and a frequency table was made by the examiner. The median number of examples right was taken as the standard for five minutes of work. The next trial test began with the type of example immediately following the last type included in the preceding test.

Practice sheets to be used for remedial work were formulated from the types of examples in the diagnostic tests. Three practice sheets followed each test, and each sheet contained one-third of the types of examples included in the test except in cases where the number of types was not a multiple of three, when a fewer number of types was included in the practice sheets containing the more difficult examples. Each practice sheet contained three times as many examples of a type as did the diagnostic test. No time limit was set for working the practice sheets.

To maintain skill in preceding operations when practice in other operations was being given, one review was planned to follow every two diagnostic tests and their accompanying practice sheets. The review sheets included samples of all types of examples preceding

the reviews. Several examples of a type were included in the review sheets, and the distribution of types was checked to see that all were included the same number of times.

In the diagnostic tests and practice and review sheets the integer combinations and types of fractions were the simple, practical ones used in everyday life. No fractions with denominators larger than 16 were used, and the majority of the fractions had denominators of 2, 3, 4, 6, or 8.

After the materials were formulated, an experiment to test their efficiency was initiated.[1] All the children to be included in the experiment, the pupils in Grade V A, were given preliminary tests on February 9, 1927. The tests used were the arithmetic computation problems of the Stanford Achievement Test, Form A, and an informal fraction test of twenty-five examples selected as representative samples of the types involved in the four operations. More than six hundred pupils were included in the experimental group and approximately four hundred in the control group. All teachers were experienced and efficient in teaching common fractions.

The teachers of the experimental group were given mimeographed instructions in the administration of the remedial work. The diagnostic tests were to be timed for five minutes. The papers were to be exchanged for scoring, the teacher reading the answers. If more than one example of a type was missed, drill on the practice sheet containing that type was to be given. If errors were made in more than one type, drill on all three practice sheets was to be given. Time was to be allowed for the finishing of all the examples on a practice sheet. The pupils were to score their own papers or to exchange their papers for scoring, the answers being in their hands. Any type of example missed by several pupils in the class was to be retaught. The review tests were to be given at the time designated on them, as much time as was necessary to finish being allowed. The pupils were to score their own papers or to exchange their papers for scoring. Approximately ten minutes a day was to be devoted to this work, only one diagnostic test, practice sheet, or review sheet

[1] John R. Clark, of the Lincoln School of Teachers College, Columbia University, assisted in planning this experiment.

to be used a day by a pupil. No other drill in common fractions was to be given.

The teachers of the control group continued the usual drills that they planned for review in common fractions.

All the children included in the experiment were given Form B of the computation test of the Stanford Achievement Test and a second informal fraction test as final tests on May 10, 1927.

Table I presents the results of the tests given in February and in May, showing the median scores made by each group and the gain made by each. The scores in the Stanford Achievement Test

TABLE I

RESULTS OF TESTS IN FEBRUARY AND IN MAY, 1927

	FEBRUARY 9, 1927		MAY 10, 1927		GAIN
	Number of Pupils	Median Score	Number of Pupils	Median Score	
Stanford Achievement Test (computation):					
Control group	397	108	385	124	16
Experimental group	639	112	640	136	24
Informal fraction test:					
Control group	417	76	413	84	8
Experimental group	647	80	629	92	12

are in points made in the computation test; the scores in the fraction test are in points on the basis of 100 points for a perfect paper, each example being valued at 4 points.

In the computation test the control group showed a gain of 16 points, while the experimental group gained 24 points. In the informal fraction test the control group gained 8 points, while the experimental group gained 12 points.

CONCLUSIONS

Organized practice material in the hands of the children, with provision for the diagnosis of difficulties and remedial work, is more effective in economy of the teacher's time and of the children's time and in final results in maintaining skill in the manipulation of common fractions than is the usual practice provided by the teacher.

A STUDY OF ONE FACTOR IN THE GRADE PLACEMENT OF READING MATERIALS

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The proper choice and placement of reading materials constitute an important and difficult problem in every school system. The successful teaching of reading depends to a great extent on the fitness of the selections for the grades in which they are to be read. The materials for any single grade should include selections of varying degrees of reading difficulty from the relatively simple to the more difficult in order that each child in the grade may find material adapted to his reading level. There is sufficient evidence to show that, so far as the individual child is concerned, the best training in reading cannot be given if the material to be read presents too many difficulties in comprehension. It is probably equally true that selections to be read by all individuals at a particular grade level should be relatively free from comprehension difficulties for the majority of the children in the grade. Uhl's investigation, in so far as it deals with the grade placement of reading materials, shows a relationship between ease of comprehension and pupils' interests in different selections.[1] In setting up certain principles with regard to teaching appreciation in the field of literature, Franklin T. Baker makes the following comment.

> Understanding is a first condition of appreciation. A poem in an unknown language might be music to our ears; but mere sound, however pleasing, is not literature. So we must choose for each period of the child's development what he can understand, not completely and finally—few of us understand to that degree—but well enough to feel at home in it. We do not try Bacon or Sir

[1] Willis L. Uhl, *The Materials of Reading*, p. 73. Newark, New Jersey: Silver, Burdett & Co., 1924.

Thomas Brown or Henry James but Longfellow or Defoe or Dickens or Stevenson. The boy must do his reading with ease and sureness—with confidence and facility.[1]

If the difficulty of comprehension is accepted as one factor to be considered in determining the grade placement of a given reading selection, the problem considered in this article arises: How shall the difficulty of comprehension of reading materials be measured?

This problem was brought to attention in the following manner. As an initial step in a supervisory program for the improvement of recreational reading in Minneapolis, the elementary-school principals were requested to submit in question form some of the difficulties which they were encountering in this type of reading work. A large number of questions were submitted. These were sorted and classified. It was found that a considerable number of the questions were concerned with the difficulty of the specific literary selections assigned to the various grades. This was especially true of Spyri's *Heidi*, which is at present read in Grade IV B.

The various studies in the field of children's interests in literature offered but little assistance in the grade placement of any book. Terman and Lima[2] recommend *Heidi* for the reading of pupils between the ages of eight and twelve, ten years being the age for pupils of average ability. Under normal conditions, this would place *Heidi* in the fifth grade. A number of courses of study, including the Minnesota state course, place it in the sixth grade. In Washburne and Vogel's study,[3] *Heidi* finds a place at the head of the list in popularity for the sixth grade.

The method employed in the study here reported is similar to that used by Adelaide M. Ayer.[4] The technique involves the devel-

[1] *Improvement in the Teaching of Reading*, p. 107. Supplement to the Course of Study in Reading, Elementary and Secondary Grades. Bureau of Research Monographs, Number 1. Baltimore: Bureau of Research, City Department of Education, 1926.

[2] Lewis M. Terman and Margaret Lima, *Children's Reading*, p. 134. New York: D. Appleton & Co., 1925.

[3] Carleton Washburne and Mabel Vogel, *Winnetka Graded Book List*, p. 104. Chicago: American Library Association, 1926.

[4] Adelaide M. Ayer, *Some Difficulties in Elementary School History*. Teachers College Contributions to Education, No. 212. New York: Teachers College, Columbia University, 1926.

opment of objective tests. One test, Test A, was designed to determine the vocabulary difficulties encountered in *Heidi;* a second test, Test B, was designed to measure the extent to which pupils understand sections of the book.

Test A is a vocabulary test to determine children's ability to define in a simple manner the words used in the book. Twenty words were selected by a sampling method. The words are used in the test in a contextual setting in order that the child will have as much assistance in determining the meanings of the words as a reading selection offers. A part of Test A is as follows:

TEST A

Here are some paragraphs or parts of paragraphs. In each paragraph there is a word which has a line under it. On the line write what the word means or another word that means the same thing.

1. The child continued her investigations and came to the fir trees behind the hut.

_____

2. Then she heard above her a shrill screaming and croaking, and as she looked up into the air the largest bird she had ever seen in her life was flying around on wide, outstretched wings.

_____

3. The grandfather put the child on the ground, unwrapped her covering, and said, "Now go in, and when it begins to grow dark, come out again and start along on the way home."

_____

Test B was designed to measure comprehension. Ten paragraphs were selected by a sampling method. After each paragraph were placed six statements, some of which were true, and some of which were untrue. This test may be illustrated as follows:

TEST B

Here are some paragraphs. After each paragraph there are some sentences about people and things that are told about in the paragraph. Some of the sentences are true, and some are not. Put a cross (X) exactly in front of each sentence that tells something true about the paragraph.

1. A shrill whistle sounded. Heidi stopped her jumping, and the grandfather stepped outside. Down from above came goat after goat, leaping like

a hunting train, and Peter in the midst of them. With a shout of joy Heidi rushed in among the flock and greeted her old friends of the morning one after the other.

_____ Peter came down the hill after the goats.
_____ Heidi was not afraid of the goats.
_____ A shrill whistle came from the hunting train.
_____ Heidi called the goats her friends.
_____ The grandfather stayed in the house.
_____ The goats came down the hill leaping.

After considerable preliminary experimentation and revision, the tests were given to 109 pupils in Grade IV B in three different schools. These pupils had not read *Heidi* but were about to begin the reading of it. The tests were also given to 121 pupils in Grade IV A in the same schools; these pupils had completed the reading of the story. The tests were then given to 52 pupils in Grades V A, VI B, and VI A in a school where *Heidi* had not been used at all.

One person gave all the tests. The same person scored the tests or carefully rechecked the scoring of another person. To insure consistency and to remove the subjective element so far as possible, the responses in the vocabulary test were entered on large sheets of paper. A column was provided for each of the twenty words in the test. After all the responses had been tabulated, they were divided into four classes as follows: (1) *Correct responses;* this class contained all the responses that were accepted as correct; the responses in this class were checked and rechecked several times in order to insure consistent marking throughout the 282 papers that were scored. (2) *Omitted responses;* this class included all cases where no attempt had been made to enter a word or definition in the blank provided for the purpose. (3) *Repeated responses;* this class included all the responses that were mere repetitions of the word itself or some form of the word. (4) *Wrong responses;* all responses which did not fall in any of the classes enumerated were considered wrong.

There were twenty words in the vocabulary test. The number and percentage of *correct* responses made by each grade on each word are shown in Table I. The pupils in all the grades were unable to produce correct definitions of the word "climax." There were very few correct definitions of "primitive," "passionately," "pursued," and "expectations." The words "cheerful" and "unwrapped" were

correctly defined by 52 per cent of the pupils in Grade IV B. The highest percentage of correct definitions of any word given by any class was 88. In each grade there was one or more words which no pupil could define.

The twenty words in Test A are located in the Thorndike word list as follows: Two of the words occur in the 1,001–1,500 group;

TABLE I

NUMBER AND PERCENTAGE OF CORRECT DEFINITIONS IN EACH GRADE OF THE WORDS IN TEST A

WORD	GRADE IV B		GRADE IV A		GRADES V A AND VI B		GRADE VI A	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Investigations	28	26	36	30	14	58	19	68
Croaking	25	23	43	36	8	33	13	46
Unwrapped	56	51	86	71	18	75	24	86
Assure	2	2	2	2	1	4	4	14
Primitive	0	0	0	0	2	8	1	4
Cunning	50	46	78	64	21	88	20	71
Discovery	37	34	72	60	21	88	23	82
Repeated	42	39	68	56	21	88	24	86
Appointed	10	9	25	21	9	38	7	25
Summoned	5	5	18	15	6	25	7	25
Passionately	0	0	0	0	1	4	0	0
Straightway	9	8	34	28	10	42	15	54
Satisfaction	12	11	21	17	6	25	7	25
Cheerful	56	51	64	53	16	67	19	68
Pursued	0	0	6	5	2	8	7	25
Familiar	5	5	16	13	13	54	12	43
Expectations	0	0	0	0	1	4	0	0
Climax	0	0	0	0	0	0	0	0
Delightful	37	34	70	58	17	71	12	43
Astonished	10	9	36	30	14	58	19	68
Number of pupils	109	.....	121	.....	24	.....	28	.....
Average	.....	18	.....	28	.....	42	.....	42

five, in the 1,501–2,000 group; four, in the 2,001–2,500 group; two, in the 2,501–3,000 group; three, in the 4,001–5,144 group; and two, in the 5,145–6,047 group. One of the words occurs in the 8,146–9,190 group. One of the words does not occur in the list. The location of these words in the Thorndike list is in itself a measure of the reading difficulty of *Heidi*. Of the twenty words selected at random, only two are to be found in the first 1,500 words in the Thorndike list.

As previously stated, Test B consisted of ten paragraphs, each followed by six true-false statements, making a total of sixty items. Responses to these items were marked right or wrong, and the total score was computed as the number of right responses minus the number of wrong responses. The percentage of comprehension was then found by dividing the total score by the total number of items. Thus, if the score was 50 minus 10, or 40, the percentage of comprehension was 40 divided by 60, or 67.

In order to have some measure of the reading ability of the pupils who took the test, the results of the Gates Silent Reading Test, Type D, which had been given to the pupils before they were given the *Heidi* tests, were used to determine the reading grade of each pupil and of each group of pupils.

To establish a relation between the results of the two tests, a method described by Otis was used.[1] According to this method, it was assumed that the pupils scored correspondingly high in both tests, or that the highest score in one test was equivalent to the highest score in the other test and that the lowest score in one was equivalent to the lowest score in the other. The intervening scores were assumed to correspond in the same way. The actual correlation between the results of Test B and of the Gates test was .60. This is as high a correlation as is usually obtained between the results of any two standardized reading tests purporting to measure comprehension of narrative material. The results of Test B and of the Gates test are shown in Tables II, III, and IV.

Table II shows that the pupils in Grade IV B, who had a median reading grade of 4.2 according to the Gates test, were able to achieve a median comprehension score in Test B of only 27 per cent. The pupils in Grade IV A, with a median reading grade of 4.5, achieved a median comprehension score of 53 per cent in Test B. While the median reading grade of the pupils in Grade IV A was only slightly higher than the median reading grade of the pupils in Grade IV B, the median comprehension score of the pupils in Grade IV A in Test B was very much higher. This is explained by the fact that the pupils in Grade IV A had read *Heidi* as a class project.

[1] Arthur S. Otis, *Statistical Method in Educational Measurement*, chap. x. Yonkers-on-Hudson, New York: World Book Co., 1925.

Fifty-three per cent in comprehension is not a high score, however, for pupils who have read the book.

Table III shows the distribution of scores in Test B according to the reading grades of the pupils as determined by the Gates test. There were thirty pupils in Grade IV B of only third-grade reading

TABLE II

COMPARISON OF THE COMPREHENSION SCORES IN TEST B WITH THE RESULTS OF THE GATES TEST

Scores in Test B	Grade IV B	Grade IV A	Reading Grade as Determined by the Gates Test	Grade IV B	Grade IV A
56–54	0	1	11.3	0	1
52–50	2	4	11.0	0	1
48–46	1	9	10.1	2	0
44–42	4	15	9.0	2	0
40–38	5	11	8.0	3	4
36–34	6	13	7.0	2	3
32–30	8	11	6.0	5	13
28–26	5	11	5.0	8	17
24–22	8	12	4.6	10	18
20–18	11	7	4.3	12	16
16–14	13	10	4.2	15	17
12–10	10	2	3.9	18	14
8–6	16	5	3.6	14	10
4–2	6	2	3.3	7	2
0—2	4	0	2.9	6	1
−4—6	3	3	2.8	0	0
−8—10	2	1	2.7	0	0
Total	104	117	Total	104	117
Median percentage score	27	53	Median	4.2	4.5

ability; five of these thirty pupils made comprehension scores of 20–29 per cent. The data for Grade IV B show clearly how achievement in the comprehension test increased as the reading grade increased. The two pupils having ninth-grade reading ability were able to make comprehension scores of 80–89 per cent. In Grade IV A also comprehension increased as the reading grade increased. The children in this grade had the advantage of having studied *Heidi* as a class activity. The children in Grades V and VI had not read *Heidi*.

Table IV shows the results for all grades. Here again the relation between achievement in comprehension and reading grade is evident.

The results of the tests showed 27 per cent accuracy for Grade IV B, 53 per cent accuracy for Grade IV A, and 60 per cent accuracy for Grades V A, VI B, and VI A.

TABLE III

DISTRIBUTION OF PERCENTAGE SCORES IN TEST B ACCORDING TO READING GRADE AS DETERMINED BY THE GATES TEST

Scores	Reading Grade								
	III	IV	V	VI	VII	VIII	IX	X	XI
Grade IV B:									
90–100	.....	.....	.....	.....	.....	.....	.....	.....	.....
80–89	.....	.....	.....	.....	.....	.....	2	1	.....
70–79	.....	.....	.....	.....	1	2	.....	1	.....
60–69	.....	1	1	3	1	1	.....	.....	.....
50–59	.....	6	6	1	.....	.....	.....	.....	.....
40–49	.....	6	1	.....	.....	.....	.....	.....	.....
30–39	.....	18	.....	.....	.....	.....	.....	.....	.....
20–29	5	13	.....	.....	.....	.....	.....	.....	.....
10–19	12	9	.....	.....	.....	.....	.....	.....	.....
0–9	13	.....	.....	.....	.....	.....	.....	.....	.....
Median percentage	12	33	55	63	70	72	85	80	.....
Grade IV A:									
90–100	.....	.....	.....	.....	.....	1	.....	.....	.....
80–89	.....	.....	.....	3	1	2	.....	.....	2
70–79	.....	8	2	7	2	1	.....	.....	.....
60–69	.....	13	4	.....	.....	.....	.....	.....	.....
50–59	.....	18	.....	.....	.....	.....	.....	.....	.....
40–49	3	11	.....	.....	.....	.....	.....	.....	.....
30–39	3	14	.....	.....	.....	.....	.....	.....	.....
20–29	2	8	.....	.....	.....	.....	.....	.....	.....
10–19	4	3	.....	.....	.....	.....	.....	.....	.....
0–9	5	.....	.....	.....	.....	.....	.....	.....	.....
Median percentage	19	51	67	77	77	85	.....	.....	85
Grades V A, VI B, and VI A:									
90–100	.....	.....	.....	.....	.....	.....	.....	.....	.....
80–89	.....	.....	.....	.....	2	1	1	1	.....
70–79	.....	.....	.....	5	.....	.....	.....	.....	.....
60–69	.....	4	4	1	.....	.....	.....	.....	.....
50–59	.....	8	.....	.....	.....	.....	.....	.....	.....
40–49	.....	4	.....	.....	.....	.....	.....	.....	.....
30–39	.....	1	.....	.....	.....	.....	.....	.....	.....
20–29	1	1	.....	.....	.....	.....	.....	.....	.....
10–19	.....	.....	.....	.....	.....	.....	.....	.....	.....
0–9	1	.....	.....	.....	.....	.....	.....	.....	.....
Median percentage	15	54	65	74	85	85	85	85	.....

The percentage of comprehension of the pupils at each reading-grade level is shown in Table V. This table should be read as follows:

The pupils in Grade IV B having third-grade reading ability had an average comprehension score of 12 per cent. The pupils in Grade IV A having third-grade reading ability had an average comprehen-

TABLE IV

DISTRIBUTION OF PERCENTAGE SCORES OF PUPILS IN GRADES IV B, IV A, V A, VI B, AND VI A IN TEST B ACCORDING TO READING GRADE AS DETERMINED BY THE GATES TEST

SCORES	READING GRADE						TOTAL
	III	IV	V	VI	VII	VIII or Higher	
90–100	.....	.....	.....	.....	.....	1	1
80–89	.....	.....	.....	3	3	10	16
70–79	.....	8	2	12	3	4	29
60–69	.....	18	9	4	1	1	33
50–59	.....	32	6	1	.....	.....	39
40–49	3	21	1	.....	.....	.....	25
30–39	3	33	.....	.....	.....	.....	36
20–29	8	22	.....	.....	.....	.....	30
10–19	16	12	.....	.....	.....	.....	28
0–9	19	.....	.....	.....	.....	.....	19
Total	49	146	18	20	7	16	256

TABLE V

PERCENTAGE OF COMPREHENSION OF PUPILS AT EACH READING-GRADE LEVEL

Reading Grade	Grade IV B	Grade IV A	Grades V A, VI B, and VI A	Average
XI	.....	85	.....	85
X	80	.....	85	83
IX	85	.....	85	85
VIII	72	85	85	81
VII	70	77	85	77
VI	63	77	74	71
V	55	67	65	62
IV	33	51	54	46
III	12	19	15	15

sion score of only 19 per cent although they had read *Heidi* in class. The pupils in Grades V A, VI B, and VI A at the third-grade reading level had a comprehension score of 15 per cent.

As shown in the study by Washburne and Vogel, *Heidi* is more popular with girls than with boys. In this connection it is interest-

ing to compare the comprehension of boys and girls who had not read the book with the comprehension of boys and girls who had read the book (Table VI). The pupils in Grade IV B had not read *Heidi*. The pupils in Grade IV A had read it as a class activity.

The boys and girls in Grade IV B, who were of approximately the same reading level, showed about the same comprehension of *Heidi*, but the boys and girls in Grade IV A, who had read *Heidi*, showed a wide difference in comprehension although they were of the same level of reading ability. The girls apparently gained more

TABLE VI

COMPARISON OF COMPREHENSION OF BOYS AND GIRLS IN GRADE IV B WHO HAD NOT READ "HEIDI" WITH COMPREHENSION OF BOYS AND GIRLS IN GRADE IV A WHO HAD READ THE BOOK

	Median Reading Grade	Median Percentage of Comprehension
Grade IV B:		
Boys	4.3	27
Girls	4.5	30
Grade IV A:		
Boys	4.6	47
Girls	4.6	60

from the reading of *Heidi* than did the boys. The book probably appeals more to the interests of girls than to the interests of boys.

During the period in which the tests were given, an attempt was made to obtain the reactions of the teachers and the principals to the use of *Heidi* as a class reading assignment in Grade IV B. It was found that in the school referred to in Table VII as School A there was a feeling that *Heidi* was not at all suitable for reading in the grade to which it was assigned. In School C, on the other hand, it was evident that there was much enthusiasm for the story and its appropriateness for the pupils who were to read it. The pupils looked forward to being in Grade IV B because that was the grade where they were to have the pleasure of reading *Heidi*. In School B there seemed to be no decided opinion as to the placement of the story. With this information in hand, it was interesting to note the results of the comprehension test in the different schools. Table VII

shows the scores of the pupils in Grade IV B who were about to begin the reading of *Heidi* and the scores of the pupils in Grade IV A who had just completed the reading of the story. It will be noted that School C, with a favorable attitude, had the highest scores.

Table VII seems to bear out the theory that the teacher's attitude has a decided influence on what the pupils obtain in the study of a piece of literature. It is quite probable, however, that the pupils in School C, where the highest scores were made, are spending

TABLE VII

COMPARISON OF THE MEDIAN COMPREHENSION OF BOYS AND GIRLS IN GRADES IV B AND IV A IN THREE SCHOOLS

	School A		School B		School C	
	Grade IV B	Grade IV A	Grade IV B	Grade IV A	Grade IV B	Grade IV A
Comprehension score:						
Boys	8	22	18	26	14	36
Girls	18	22	12	30	27	42
All pupils	14	22	16	28	22	40
Percentage of comprehension:						
Boys	13	37	30	43	23	60
Girls	30	37	20	50	45	70
All pupils	23	37	27	47	37	67
Reading grade:						
Boys	3.7	4.3	4.5	4.7	3.9	4.2
Girls	4.3	4.3	4.2	4.7	4.3	4.8
All pupils	4.1	4.3	4.4	4.7	4.1	4.7

too much time on the book. While the scores made in School C are the highest made in any school, they do not seem to indicate comprehension adequate for complete enjoyment of the story.

SUMMARY AND CONCLUSIONS

1. Such words as "climax," "primitive," and "passionately" were beyond the comprehension of all the 230 fourth-grade pupils who took the test, and such words as "summoned," "assure," "expectations," and "pursued" were understood by less than 26 per cent of the pupils irrespective of grade.

2. In applying the reading grades as determined by the Gates test to the scores in Test B, it was found that to attain a comprehension score of 85 per cent in Test B requires eighth-grade reading ability; 75 per cent, seventh-grade reading ability; 70 per cent, sixth-grade reading ability; 65 per cent, fifth-grade reading ability; and 50 per cent, fourth-grade reading ability.

3. The Heidi tests are informal. There are no norms or standards. It would be difficult to determine what a satisfactory score would be. Miss Ayer[1] ventures the statement that school practice seldom considers any scores much below 75 per cent satisfactory. It would seem that, even with the keenest interest and the best teaching, scores above 75 per cent could not be attained in the Heidi tests by pupils of fourth-grade reading ability.

4. There are, to be sure, factors other than difficulty of comprehension to be taken into consideration in determining the grade placement of books and reading selections. There may be portrayals of certain character traits in a story which would appeal to children of a particular age or reading grade. There may be topics treated that are closely related to the reading materials in other subjects in a certain grade and therefore of considerable value. Such factors warrant consideration. It is doubtful, however, even with the best teaching, whether such factors would outweigh many difficulties in comprehension.

[1] Adelaide M. Ayer, *op. cit.*, p. 32.

WHAT DO SCHOOL NURSES DO?

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What do school nurses do? What should they do? What should they not do? How much time do they spend in this or that activity? These are questions often asked. In fact, school nurses themselves, particularly beginning school nurses, often ask such questions, since they are uncertain as to what is expected of them as well as to what is the best use of a nurse's time.

In an effort to answer these questions and to assist the school nurses in Lincoln, Nebraska, in evaluating the use they were making of their time, three separate observations were made. These are here reviewed in three parts.

In Part I an analysis is made of the nurses' daily-weekly reports covering selected periods. Part II analyzes the use nurses make of their time as revealed in daily diaries covering fifty half-days. Part III is a comparative study of the field work nurses do and an evaluation of this essential activity.

In individual conferences with the nurses attended by the school physician, the writer interpreted the results of these three studies, comparing each nurse's record with the average, highest, and lowest records and making suggestions for the improvement of her work. It is believed that the data will be of value not only to the local staff but to others as well.

IDENTITY OF CONDITIONS

In this comparative study it is impossible to say that the work of all nurses is identical. The number of pupils per nurse varies from 1,247 to 2,120; the number of buildings per nurse varies from two large buildings to six small buildings. Some nurses have specialized work (open-window rooms); some have served more than others in clinic work; some have long distances to travel; the health problems of one community may differ from the health problems of an-

other community; some nurses are in elementary schools only, others in junior high schools and elementary schools, some having a senior high school group in addition. These facts should be kept in mind in comparing the data concerning individual nurses.

The nurses in Lincoln do no regular classroom teaching. Instruction often covered by school nurses is included in the instruction outlines for teachers in the elementary schools.

TABLE I

AVERAGE NUMBER OF TASKS COMPLETED PER WEEK PER SCHOOL NURSE

	October, 1926, and January and April, 1927 (Seven Nurses)	October, 1927 (Eight Nurses)	January, 1928 (Eight Nurses)
Number of classrooms inspected	4.6	5.0	4.0
Number of hours of routine medical inspection	1.2	0.5	0.1
Number of pupil temperatures taken	20.7	17.4	16.5
Number of treatments:			
Impetigo	1.2	2.0	2.6
Ringworm, general	0.3	0.5	0.3
Ringworm, scalp	0.01	0.03	0.0
Inflamed eyes	0.7	0.4	0.8
Pediculosis	0.1	0.1	0.0
Scabies	0.8	0.2	0.5
Miscellaneous	38.6	50.0	41.0
Number of pupils vaccinated for smallpox	0.0	0.0	12.4
Number of vaccination dressings	0.0	0.0	83.5
Number of cases of toxin-antitoxin assistance	*	15.0	14.0
Number of homes visited	4.3	5.0	5.0
Number of teachers consulted	12.9	10.8	8.0
Number of parents consulted	1.9	1.5	2.0
Number of pupils consulted	10.5	8.9	7.0
Number of conferences with principals	5.1	4.6	3.5
Number of telephone calls	8.1	7.0	6.5
Number of rooms in which vision and hearing were tested	5.8	3.0	2.6
Number of hours of clerical work	5.0	5.0	2.0

* Data incomplete.

PART I

The daily-weekly reports of the school nurses for five four-week periods were used for Part I of the study. Four weeks of each of the following months were selected as representative of the nurses' work: October, 1926; January, April, and October, 1927; and January, 1928. Table I shows the average number of tasks completed per week per nurse. Table II compares the highest and the lowest

weekly averages for any one school with the average per week per nurse. In the actual use of these data, each nurse's average was compared with the average for all nurses combined and with the

TABLE II

WEEKLY AVERAGES PER NURSE COMPARED WITH HIGHEST AND LOWEST WEEKLY AVERAGES FOR ANY SCHOOL

	OCTOBER, 1927 (EIGHT NURSES)			JANUARY, 1928 (EIGHT NURSES)		
	Average per Week per Nurse	Highest Weekly Average for Any School	Lowest Weekly Average for Any School	Average per Week per Nurse	Highest Weekly Average for Any School	Lowest Weekly Average for Any School
Number of classrooms inspected	5.0	14.0	0.0	4.0	5.0	0.0
Number of hours of routine medical inspection	0.5	2.0	0.0	0.1	0.5	0.0
Number of pupil temperatures taken	17.4	19.0	0.0	16.5	17.0	0.0
Number of treatments:						
Impetigo	2.0	5.0	0.0	2.6	6.0	0.0
Ringworm, general	0.5	3.0	0.0	0.3	1.0	0.0
Ringworm, scalp	0.03	0.3	0.0	0.0	0.0	0.0
Inflamed eyes	0.4	0.2	0.0	0.8	2.0	0.0
Pediculosis	0.1	0.8	0.0	0.0	0.0	0.0
Scabies	0.2	1.0	0.0	0.5	1.5	0.0
Miscellaneous	50.0	60.0	7.0	41.0	43.0	0.0
Number of pupils vaccinated for smallpox	0.0	0.0	0.0	12.4	49.0	0.0
Number of vaccination dressings	0.0	0.0	0.0	83.5	291.0	0.0
Number of cultures taken	0.0	0.0	0.0	0.0	0.0	0.0
Number of cases of toxin-antitoxin assistance	15.0	120.0	0.0	14.0	92.0	0.0
Number of homes visited	5.0	11.0	0.0	5.0	6.5	0.0
Number of teachers consulted	10.8	20.0	0.0	8.0	20.0	0.0
Number of parents consulted	1.5	2.0	0.0	2.0	3.0	0.0
Number of pupils consulted	8.9	15.0	0.0	7.0	18.0	0.0
Number of conferences with principals	4.6	5.0	0.0	3.5	4.0	0.0
Number of telephone calls	7.0	10.0	0.0	6.5	6.0	0.0
Number of rooms in which vision and hearing were tested	3.0	3.5	0.0	2.6	4.0	0.0
Number of hours of clerical work	5.0	6.0	0.8	2.0	2.5	0.0

highest and the lowest individual averages. Since these data have no significance except for the individuals concerned, they are not reported here.

PART II

The daily-diary report plan was carried out during the month of April, 1928. Each nurse reported from six to nine half-days of work, including each school on her schedule once, twice, or three times. The blank used in reporting was headed as follows:

School A.M. P.M. _____ Date _____

BLANK FOR RECORDING DAILY DIARY OF SCHOOL NURSE'S ACTIVITY

During the time indicated each nurse is requested to record the actual number of minutes given to various activities in and out of the building, each half-day on a separate blank. Examples: Record number of minutes given to first aid, telephoning, pupil conferences, home visits, travel from school to school, vaccination dressings, office, clerical work, testing vision, teacher conferences, etc.

It was understood that each nurse would record in time intervals all the types of work done in order that a picture might be obtained of the consecutive duties, interruptions, etc., that occur. When the reports were turned in, the actual activities were classified and tabulated in terms of the amount of time devoted to them. The percentage distribution of the total time to the various activities was then determined for each nurse.

The grand total of the time reported by all the nurses for each activity was calculated, and the percentage distribution of the total time per nurse was determined. The data for seven nurses are summarized in Table III. Each nurse's individual averages were written in the last column and shown to her in order that she might compare the use she made of her time with the average, highest, and lowest records.

This study reveals the extent to which a nurse's preferences determine the emphasis she gives to her work. One who enjoys pupil conferences, for example, arranges as many conferences as possible, while another finds little time for this work. The situation itself requires certain activities, but there is little doubt that preference is the cause of emphasis in excess of the average. This is apparent to the writer since the objective results often coincide with subjective observations. These data became of real value when each nurse had an opportunity to compare the distribution of her time with the data shown in Table III.

PART III

There are hundreds of school children in Lincoln who are malnourished; almost 25 per cent of the children have serious tonsil or adenoid difficulties; from two to three hundred children have serious visual defects that need immediate attention. Since all these prob-

TABLE III

HIGHEST PERCENTAGE, LOWEST PERCENTAGE, AND AVERAGE PERCENTAGE OF TOTAL TIME DEVOTED TO EACH TYPE OF ACTIVITY

	Highest Percentage of Total Time Spent by Any One Nurse	Lowest Percentage of Total Time Spent by Any One Nurse	Average Percentage of Total Time Spent by the Nurses Reporting	Percentage of Total Time Spent by Miss ———
Cleaning, caring for, and arranging equipment*.....	10.7	4.0	6.3	
First aid, examinations, exclusion, temperatures, etc.	28.0	8.5	19.7	
Pupil conferences†.....	22.0	1.5	16.1	
Teacher conferences.....	10.0	2.0	4.8	
Principal conferences.....	5.2	3.0	4.1	
Clerical work.....	15.0	5.3	11.3	
Telephone calls.....	15.0	1.5	5.1	
Home calls.....	22.2	4.0	11.2	
In transit.....	7.8	2.2	5.5	
Inspection of classes.....	12.9	2.0	4.1	
Office‡.....	7.0	1.7	2.2	
Health service§.....	10.0	0.0	5.2	

* Includes preparing for clinics and cleaning up afterward.
† Includes health conferences with children soon to enter school.
‡ The office of department and school physician.
§ Should be interpreted as vaccination clinics.

lems affect the attendance and the work of the child in school, it is apparent that friendly home visits by school nurses to explain and urge remedial aid or to interest the home in the "in school" program are of primary importance. That there is more than enough of this work to occupy the nurse's time that is available for field work is

apparent. Each nurse ordinarily has from the close of school at 3:30 P.M. until 5:00 P.M. daily to spend in the field. Many nurses make their calls during the forenoon or the afternoon as soon as the building routine work is completed.

To suggest that public-health nurses outside the school should do this field work would be illogical. The most conspicuous cause of the lack of success of health education in the school is the lack of information and necessary co-operation on the part of the home. The school nurse who works closely with the principal and the teacher and sees the children at school is the logical person to effect the home contact, and her instructions are best received in the home.

The belief that the school nurse has no business outside the school building is a narrow conception of the work of the school nurse. The term "school nurse" is perhaps misleading. Nursing implies hospital care, and the school nurse is too often thought of as giving medical attention. In making a home call, therefore, a school nurse is often thought of as doing bedside nursing. As a matter of fact, not a single call is for this purpose; every call is either an investigational call or an educational call.

The number of home calls that a school nurse makes is an important index of her value and efficiency as a nurse, all other conditions being equal. What shall be the standard of achievement in this important work? A study of the rather complete reports of six nurses covering a period of thirty-three weeks (September 12, 1927, to May 4, 1928) was made with a view to answering this question. Table IV shows the results. More calls were made during the week of April 9 than in any other week, eighty-one home calls being made by the six nurses. The six records were nineteen, nine, nine, nineteen, twenty-five, and no calls, respectively. The smallest number of calls was reported for the week of September 12, the opening week of school, when nine home calls were reported by the six nurses as follows: two, one, none, five, none, and one. It is interesting to note that one nurse made almost one-half as many calls in one week as another nurse made in thirty-three weeks.

Since as many as twenty-five home calls were made by one nurse in one week, since the average for six nurses over a long period is six per week, and since the highest average is ten per week and the

lowest two, it may be illogical to suggest a standard. The problems in the district of each nurse are, however, reasonably numerous although different in kind from those in other districts, and the nurse having one of the highest averages has the heaviest pupil load. The

TABLE IV

DATA CONCERNING THE HOME CALLS MADE BY SIX NURSES IN THIRTY-THREE WEEKS

	Number
Total calls made	1,242
Average per nurse	207
Average per week per nurse	6
Largest number of calls reported by any one nurse	336
Smallest number of calls reported by any one nurse	53
Largest number of calls made in any one week by one nurse	25
Highest individual weekly average	10
Lowest individual weekly average	2

demands and exigencies of the work are therefore not singularly different for the different nurses—certainly not to the extent of from two to ten. It is proper to conclude, then, that the average of six home visits per week should represent the minimum for each nurse.

PRESENT REQUIREMENTS FOR TEACHERS OF SUBNORMAL AND SUPERIOR CHILDREN

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There are in the United States approximately 20,000,000 school children. Most authorities agree that, of this number, 12 per cent, or about 2,400,000, may be classified as sufficiently below normal in mentality to require special attention, and 600,000 may be classified as so unusually superior in mentality as to deserve special attention.

Recent investigators have pointed out the fact that the school must provide special education for subnormal and superior children if much progress is to be made by society in the future. At least 100,000 teachers must have the training and the ability to draw out the best that the children have to offer.

In 1910 an address was delivered by Charles A. A. J. Miller before the National Education Association. He stated:

> In the good qualifications and training of the teacher is the strength and hope of a class, in particular the special class. When casting about for a teacher to put in charge of a special class, one should look for certain qualifications and training. For the purpose of simplifying the task there ought to be an examination in regard to:
>
> A. Innate qualifications:
>
> 1. Physical
> 2. Manual
> 3. Mental
> 4. Moral
> 5. Spiritual
>
> B. Acquired qualifications:
>
> 1. A rich personality
> 2. A pedagogic sense
> 3. An insight into the mysteries of child-nature[1]

[1] Charles A. A. J. Miller, "What Kind of Qualifications and Training Should the Teacher of the Special Class Have?" *Journal of Proceedings and Addresses of the National Education Association*, XLVIII (1910), 1061.

In 1924 John Louis Horn reported on both the teacher of the supertypical child and the teacher of the subtypical child, saying that "frankness compels us to recognize, for example, that we shall have to make special selections from the teacher group in an effort to find those who by personality, endowment, and training are peculiarly adapted to work with supertypical children."[1]

In 1925 Lewis M. Terman reported that "the present neglect of superior talent is sufficiently indicated by the inability of teachers to recognize it."[2]

In the autumn of 1926 a survey study[3] to determine the present requirements for teachers of subnormal and superior children was undertaken. Questionnaires were addressed to 157 superintendents of schools who had previously reported special classes, 116 directors of research, 23 deans of normal schools and colleges, and 48 state superintendents of public instruction.

Four forms of the questionnaire were used. The central theme of each was: Is more extensive training necessary for the teacher of the special class? If so, what is the nature of this training?

Two hundred and twenty-eight, or 66 per cent, of the questionnaires were returned—99 from superintendents of schools, 71 from directors of research, 17 from deans of normal schools and colleges, and 41 from state superintendents of public instruction.

It is impossible to delimit the conception of the terms "subnormal" and "superior" as used throughout this report since the authorities reporting were not asked to define the terms. However, it is safe to assume that they considered Terman's table[4] as the basis on which to classify their pupils. It is doubtful whether any of those reporting considered pupils with I.Q.'s below 50, who are ordinarily to be classified as imbeciles.

While the problem of the best means of educating pupils of vary-

[1] John Louis Horn, *The Education of Exceptional Children*, p. 136. New York: Century Co., 1924.

[2] Lewis M. Terman and Others, *Genetic Studies of Genius*, I, 640. Stanford University, California: Stanford University Press, 1925.

[3] This study was made under the supervision of August Dvorak, of the Department of Education, University of Washington.

[4] Lewis M. Terman, *The Measurement of Intelligence*, p. 79. Boston: Houghton Mifflin Co., 1916.

ing degrees of mentality was not considered in the survey, the dates of organization of special classes give some clue to the present practices. Since 1914 the number of special classes for subnormal children has remained fairly constant in those school systems previously reporting such classes. Only 12 of 170 cities have failed to continue to educate pupils of inferior ability in special classes. The present tendency seems to be away from the plan of special classes for children of superior mentality. The tendency is toward the multiple-track plan of education.

Of the forty-two states represented in the replies to the questionnaire, seventeen have definite legislation concerning qualifications

TABLE I

Institution	Number of Times Reported
Brown University	1
University of California	1
Teachers College, Columbia University	5
Los Angeles (observation of work in centers of the public-school system)	2
University of Minnesota	2
New York University	1
State Teachers College, Oshkosh, Wisconsin	1
Training School at Vineland, New Jersey	6
Yale University	1

for teachers of special classes. This legislation covers the general and the professional requirements. The standard at which most states are aiming is that every teacher of subnormal children shall have had special training and experience with normal and subnormal children. Teaching experience alone is no longer considered adequate.

The following courses of study were recommended by both state and city superintendents of schools: (1) clinical tests and measurements, (2) psychology of the defective child, (3) principles of teaching defective children, and (4) handwork for subnormal children.

Some states simply authorize the commissioner of education or the state department of education to make such regulations regarding the training of teachers for special classes as seem desirable.

Pennsylvania is the only state that reported special legislation for the teacher of the superior child. The law states that the appli-

cant must have had conspicuously successful teaching experience in at least three different grades.

From two to four years of previous teaching experience is desirable, according to all the authorities replying to the question.

In addition to the state normal schools and colleges mentioned in a general way by those replying to the question, the institutions listed in Table I were mentioned specifically for their outstanding work in training teachers of special classes.

Of the total of 4,148 teachers of special classes employed at the present time by the school systems co-operating in the survey, only a very small percentage have the qualifications necessary according to the replies to the questionnaire. The ideal teacher is hard to find. A teacher for a special class is often selected from the regular staff because of her success in instructing the particular class of defective or superior children in her home room. The personality of the teacher often outweighs the lack of professional training.

Educational Writings

REVIEWS AND BOOK NOTES

A scientific study of the growth of number concepts.—It is only occasionally that an epoch-making piece of research makes its appearance, but, unless all signs fail, Professor Brownell's contribution[1] belongs in that class. Its chief excellence lies in the fact that it has raised into the clear a potent issue in the teaching of primary number which has hitherto remained in relative obscurity.

We have been accustomed to measure results in the fundamentals of arithmetic in terms of accuracy and speed only. Now Professor Brownell convinces us that the element of method is at least equally important. Children must grasp concrete numbers before they can add or subtract them in abstract form. The understanding of concrete numbers is conditioned upon the manner in which such numbers are apprehended or perceived. Apprehension takes place at three rather distinct levels. At the lower level of apprehension the child sees a group of dots as so many 1's. At the intermediate level he sees the dot pattern as a familiar group plus several 1's. At the upper level the pattern appears as composed of two or more familiar groups.

The Brownell study proves the existence of these levels and also demonstrates the fact that, when immature pupils are assigned the task of learning abstract numbers, they carry over to that task the methods which they are then using in their apprehension of concrete numbers. The child who counts concrete numbers will also count combinations. The child who sees one familiar group and counts the remainder of a concrete number will be inclined to "solve" abstract combinations; that is, for example, on meeting 8+5 as a new combination, he will think of 8+4=12 and 12 and 1 is 13. Not until the pupil can see concrete numbers as two or more familiar groups can he learn the abstract number combinations in the approved manner.

All this means that it is, in general, a mistake to require young children to begin with the memorizing of abstract combinations. Such procedure is safe only after a substantial amount of practice has been afforded in the apprehension and manipulation of concrete numbers. These findings are so revolutionary that every author of textbook and drill material for primary arithmetic will

[1] William A. Brownell, *The Development of Children's Number Ideas in the Primary Grades*. Supplementary Educational Monographs, No. 35. Chicago: Department of Education, University of Chicago, 1928. Pp. xiv+242. $1.50.

need to review his position and some authors will undoubtedly find it necessary to revise their work.

The author suggests that most of our present embarrassment in the teaching of the fundamentals of arithmetic is the result of our failure to provide a suitable treatment for concrete numbers in the primary grades. He estimates that it took some of his subjects two or three years to overcome the handicap which they suffered because of this failure. Drilling children in bad habits is poor policy even when it is continued to the end of the eighth grade, while insistence on speed under conditions of improper drill leads to the multiplication of errors.

The study was carefully made, and it includes data gathered from the responses of 1,858 children in the first seven grades of eight elementary schools. The data consist of careful records of what children actually did rather than analyses of what they ought to have done. The study is replete with implications which are calculated to jar the complacency of a number of people. Some of them may be summarized as follows: More space must be devoted to the teaching of primary number in our textbooks, and more time must be spent on the teaching process. Many errors are to be expected as young children struggle from one stage of learning into another. Adding upward and downward when taught together lead to serious errors. Children are entitled to know why the answer to an addition combination is what it is. Combinations should not be taught as mere isolated items in chance order. The teaching of primary number is much more complex than has been thought. The early memorization of combinations is putting the wrong end foremost. Insistence on speed is often disastrous. An extensive course in concrete numbers should precede the teaching of abstract combinations. The way to get mastery of the fundamentals is to do the teaching well in the primary grades instead of extending the present faulty technique throughout the seventh and eighth grades. Pupils should be permitted to profit so far as possible from the transfer of training from that which they have learned to that which is new to them. Most primary number work as now taught is purely formal and verbal, devoid of meaningful content.

It is impossible to mention all the points of interest in this study within the limits of a brief review. The monograph is not easy reading, but it will amply repay any study that is put upon it. In the opinion of the reviewer, the study will long stand as the most severe arraignment of primary number work that has appeared in this century.

W. J. OSBURN

OHIO STATE UNIVERSITY

A problem course in school finance.—The idea of basing instruction on specific examples or "cases" has been applied to a number of subjects and courses in different types of schools. This movement is the obvious reaction to the recognized shortcomings of the more philosophical and abstract types of

instruction which characterized teaching in general a generation ago and which left much to be desired in the way of developing the ability to apply theoretical concepts to practical situations. While the value of much of the subject matter that is presented in the guise of problem or case material is open to question, the outcomes of the use of more concrete exercises in the teaching of many of the school subjects have indicated that the use of such material serves as a corrective of many of the recognized deficiencies of the more conventional types of teaching. A recent book[1] of the American Teachers College Series affords an example of the way in which problem exercises may be employed to vitalize instruction at the college level.

The book deals with the commonly discussed topics of school finance. An introductory chapter provides a background for the consideration of the financial aspects of school administration by means of historical and comparative material designed to show the extent to which the resources of the country are applied to the maintenance of educational activities of a formal character. The last chapter is a discussion of the professional relations that should be established and maintained between the superintendent of a school system and the board of education. Each of the intervening ten chapters considers some phase of the financial administration of specified types of school organization. These chapters consider such topics as school accounts, budgeting, business management, salaries, bond issues, and building programs. The distinctive feature of the book is the prominence given to problem material and suggestions for adapting instructional procedure to the use of such material in a course in school finance. While the topic of each chapter is discussed at some length in the opening pages of the chapter, the discussion serves primarily to introduce the problem exercises which are intended to direct the outside study and the class activities of the group. The chapter ends with a liberal list of references coded to indicate the particular exercises with which they deal. Each exercise describes a problem situation which confronts the superintendent or principal, indicates the method of attack, and prescribes the manner in which the solution of the problem is to be presented to the class acting as a substitute for the board of education, the community, or other interested group. It is assumed that the research necessary for the determination and presentation of a suitable recommendation will provide the prospective school administrator with a practical type of training for his later responsibilities as the actual head of a school system.

The problem material is, for the most part, well selected, and the text discussions are usually in accord with sound principles of financial administration. The bibliographical material is advantageously chosen and classified. As an example of the kind of study and training required by the problem exercises, the assignment provided by Problem 7 requires of a newly appointed high-school

[1] E. E. Lindsay, *Problems in School Administration.* New York: Macmillan Co., 1928. Pp. xxiv+544. $2.50.

principal that he undertake to correct a condition which has prevailed for four years in his school with respect to the handling of various pupil funds. He is advised that there has been much criticism from the community because of the shortages which have arisen from mismanagement of funds for athletics, debating societies, etc., and is informed that one of his first services should be that of preparing and installing an adequate and efficient system of internal accounts for the school. He is told that the system should be simple, inexpensive, and easily handled and should co-ordinate with the main system of accounts of the school district. The specific assignment for the student in the course is as follows:

> 1. Outline the principal's approach to this problem.
> 2. Construct such a system and be prepared to present it to the class as to a committee of the board of education at your superintendent's invitation. Make your explanation so simple as to be easily understood, and stress the points in it which you think would appeal to such a committee [p. 68].

A few of the problems are open to criticism on the ground that the student would be required to do nothing more than guess at a solution. For example, Problem 62 (p. 277) states that, as the result of unusually severe weather, the cost of fuel in a certain school district will be at least $400 more than has been allowed in the annual budget, that the total budget for the school for the year is $30,000, that all available funds have been allocated and there is no opportunity for transfer of funds, and that the superintendent must find a way to meet the fuel bill. Also there are a few cases in which the text discussion includes some unguarded statements which may be misinterpreted by an inexperienced superintendent or which may lead such a superintendent to advocate a radical reorganization of his school system without being aware of all the significant consequences of such a reorganization. An example of this type of discussion is found on pages 127–30, where the all-year school is advocated and the claim is made that such provision would shorten the public-school course of pupils generally by three or four years. Moreover, there is no reservation with respect to the value of an education of that extent which is acquired by the average boy or girl in any type of community or school system in the country in eight or nine years instead of eleven or twelve years. To quote the author, "The year-around school could deliver the same educational product in eight or nine years that now requires twelve years" (p. 129). The accompanying discussion emphasizes the financial savings of such a reorganization of a school system, the assumptions set forth being reasonably sound, but the unqualified statement that school systems in general can give children the same kind of education in eight or nine years that they are now getting in twelve years is certainly to be questioned in the light of the recognized relation of maturity to success in school work at this level. There are, likewise, a few instances in which statements appear to be inconsistent. For example, in a discussion of the division of financial support between the state and the local districts, Iowa, Kansas, and

West Virginia are listed on page 22 among states which provide more than one-third of all the financial support required for their schools, and on page 25 the same states are included in the list of those in which more than 90 per cent of the financial support comes from the local community. Again, the relative number of square feet of floor space per pupil required for lecture and laboratory instruction is given as ten to twenty-six on page 112 and as ten to fifty on page 116.

The book provides a well-organized body of subject matter for a course in school finance and includes an unusual amount of concrete material and problem exercises, which for the most part are calculated to require a more definite preparation and a more practical use of material than are commonly secured in such courses. In addition, the book includes suggestive problem situations and reference material which make it valuable as a handbook for superintendents and principals in service.

N. B. HENRY

Legal requirements for the certification of teachers.—The general lack of academic and professional training on the part of American teachers has frequently been the subject of comment. American civilization, it seems, has not yet reached the level where it demands that teachers be persons of a great deal of culture and professional training. There is unmistakable evidence, however, that the status of the teacher is rapidly changing. Whether this is due to the development of the science of education or to increase in material wealth, the fact is that the standards for entering the profession are constantly being raised.

A recent bulletin[1] of the United States Bureau of Education summarizes the law in force and at the same time points out certain post-war tendencies in certification. Since 1921, for example, there has been a marked increase in minimum scholarship requirements. In that year in thirty states there were no definite scholarship prerequisites for certificates of the lowest grade issued to beginning teachers; in 1926 such was the case in only fifteen states. In 1921 only fourteen states required as much as completion of a four-year high-school course of beginning teachers; in 1926 thirty-three states required this or more. In 1921 not a single state required high-school graduation and one year of higher-grade professional training of all teachers; in 1926 nine states made such a requirement, and four states required two years of professional training above the high-school level.

Another tendency is equally notable. Certificates are being issued almost exclusively by state officials. In Massachusetts alone the local authorities retain complete control over the certification of teachers in their employ. In thirty-six states the state itself issues all certificates; in four other states the state prescribes the rules and gives the questions, and state officials read the papers.

[1] Katherine M. Cook, *State Laws and Regulations Governing Teachers' Certificates.* Bureau of Education Bulletin No. 19, 1927. Washington: Government Printing Office, 1928. Pp. vi+296.

In five states the state authorities make the regulations and prepare the questions; the county authorities read the papers and issue the certificates.

There is, moreover, in recent legislation a recognition of the need of certification for specialized fields of work. There is much less tendency than formerly to issue blanket certificates valid for all kinds of teaching. Forty-five states, for example, issue certificates for teaching the so-called "special" subjects. Among these are certificates for teaching dental hygiene, atypical children, and Americanization and certificates for correction of speech defects and for school library work. There is, too, a tendency to differentiate with respect to elementary-school and high-school teachers. There is a marked tendency to require a degree of specialization of both high-school and elementary-school teachers. Some states even go so far as to require special certificates of junior high school teachers and teachers in junior colleges. The demand for specialization is also seen in the growing tendency to require special certificates of administrative and supervisory officers. Twenty states now issue special certificates for high-school and elementary-school principals. There is also differentiation between supervisory and administrative functions.

The professional training of teachers has been undertaken in a number of states in training classes in connection with secondary schools. This has usually been looked upon as a temporary measure. The tendency is to give less recognition to this type of training. Since 1921 six states have abandoned the practice altogether, and other states are now requiring that the professional training be given after the completion of the full four-year high-school course. At present only eight states issue certificates on the basis of training given during the regular high-school course.

A decided advance has also been made with respect to requirements for renewal of low-grade certificates. In a number of states certificates of the lowest grade are not renewable; the teacher must qualify for a certificate of higher grade or discontinue teaching. Thirty-four states require some type of professional study before a low-grade certificate can be renewed or converted into a certificate of higher grade.

The bulletin is well provided with tables and maps and is so organized that the reader can readily ascertain the requirements of any particular state or section of the country. It should be especially valuable to those who are interested in requirements for teaching and to those who are responsible for the determination of state educational policy.

I. N. EDWARDS

A textbook in educational research.—Research in the field of education has become widespread both in spirit and in practice. Schools of education as well as departments of research in large public-school systems are promoting it with greater or lesser effectiveness. So marked is the emphasis that in recent years a considerable number of books have appeared dealing with its technique.

One[1] of them is designed as a textbook to be used in connection with a course preparatory to graduate research.

This book is largely of a statistical nature. Unlike some of the earlier books, it undertakes to cover a wide range of pertinent material. This characteristic is evidenced by a consideration of the chapter titles: "Selecting Problems," "Experimental Technique," "Historical Technique," "Psychological Technique," "Case-Study Technique," "Survey Technique," "Curriculum Making," "Job Analysis," "Interviews," "Questionnaires," "Observation," "Measurement," "Statistical Technique," "Tables and Graphs," "Library Technique," "Analysis of Data," and "Reporting Research."

Because of the number of topics included, the treatment of each is of necessity very limited, so much so, in fact, as to make much of the content of little value save as a general outline.

The chapter entitled "Psychological Technique," for example, has a paragraph on each of the following topics: "Psychology as a Science," "The Experiment," "Observation," "The Conditioned Reflex," "Neurology and Physiology," "Pathology," "The Study of Animals," "Genetic Studies," "Psycho-Analysis," "Interpretation," "Testing," "Learning Curves," "Individual Differences," and "Applied Psychology." Within the narrow limits of a paragraph little more than the briefest suggestion is possible, and no illustrative cases are provided.

In like manner, the chapter entitled "Statistical Technique" provides only the barest statements concerning a few processes and but one or two illustrative cases, with consequent vagueness in treatment in so far as the beginner in the field is concerned. This evidently was sensed by the author for the following statement occurs. "This procedure should be studied more in detail in a regular statistics book, after which this brief presentation may be used for reference" (p. 226). It is doubtful whether such use will ever be made of it by one familiar with the field.

The adverse criticisms thus far made are not intended to carry the conviction that the book is without value. The purpose of the author, as expressed in the Preface, was to make provision for a "textbook in a regular course in the Senior or graduate years, in preparation for entrance into graduate study and research. Allowing for seventeen effective weeks in the semester, the course would deal with one chapter a week, together with extensive supplementary reading and study in the library. In this way each student should get acquainted with the leading authorities in each type of research and the principles involved in it."

Whether or not such an aim can be realized depends entirely on the previous training of the student and the extent of his contact with the particular and related fields. It is difficult to imagine one gaining an effective acquaintance

[1] Claude C. Crawford, *The Technique of Research in Education*. Los Angeles, California: University of Southern California, 1928. Pp. 320.

with psychological, survey, or statistical technique in one week, not to mention the gaining of a familiarity with the authorities. It is conceivable, however, that an introduction might be made to the whole problem of research, with respect to both methods and fields, through such a course as that for which the book was prepared. Such an experience would serve not only to delimit areas but also to accentuate the need for mastery of the tools essential to the attack on a given problem. That graduate students would profit by an overview of possible problems in their relation to education is undoubtedly true, especially if such an experience were preceded by not a little contact with the field itself. The course would thus become a sort of orientation course.

With this purpose in mind an instructor would find the book of value and the student a stimulus. The possibility of succeeding with such a course and the usableness of the book can be determined only by trial. It is the conviction of the reviewer, however, that the largest contribution of the book lies in the fact that it has brought together in an expanded outline form a series of statements setting forth the educational areas in which research is possible and has briefly discussed some of the tools useful or necessary in carrying on research.

EMORY UNIVERSITY R. E. WAGER

New difficulty rankings for addition and subtraction combinations.—In the past the preferred research technique for discovering the comparative difficulty of the various number combinations and hence for determining the most effective and the most economical order of teaching these number facts has been that of investigating the errors made by children in the intermediate and higher grades in dealing with these combinations. Studies of this type are open to the criticism that they measure not the learning difficulty of the combinations but rather children's ability to use the combinations after they have had unknown amounts and kinds of uncontrolled practice with them.

An exceptionally praiseworthy effort to determine the learning difficulty of the 100 addition combinations and the 100 subtraction combinations has recently been reported.[1] In general, the experimental procedure was as follows: From initial tests, given individually to twenty-five children in the case of the addition combinations and to fifteen children in the case of the subtraction combinations, "combinations mastered, or partly mastered, were selected for first 'sure' mastery. The remaining combinations were then taken up in groups in practically random order with a general drift from 'smaller' to 'larger' combinations" (p. 21). Drill periods and test periods alternated until all the combinations had been mastered. Maintenance tests, to measure retention, then followed at intervals of a week. "Mastery" was defined as the ability to give prompt, accurate responses to all the combinations at a single sitting and to maintain such a level of performance over a period of three weeks. Teaching

[1] Frederic B. Knight and Minnie S. Behrens, *The Learning of the 100 Addition Combinations and the 100 Subtraction Combinations.* New York: Longmans, Green & Co., 1928. Pp. xiv+82. $1.00.

and testing were entirely individual under as nearly typical classroom conditions as possible; they represent, therefore, a prodigious amount of labor. Elaborate records, which covered each child's work on each combination, were made, in part by means of a kymograph and a Jaquet polygraph. "These records included all actual responses, the time of all responses in tenths of a second, the place and nature of all instruction, and the occurrence and nature of each error" (p. 6).

The principal exhibits in the report are, of course, the difficulty rankings of the addition and subtraction combinations, the former based on 100,000 measures, the latter on 60,000. Rankings were "derived from pooling the factors: number of responses to learn, number of errors encountered in learning, time of first successful response, time of final learning response, time of review responses" (p. 16). Minor results of the study include (1) disagreement with Myers' contention that children tend to learn specific wrong combinations except possibly when the combinations are taught in order or in tables; (2) evidence of a positive and important "dynamic relationship" between addition combinations and their reverses ($r=.61$) and between subtraction combinations and their reverses ($r=.42$) instead of the negative relation found by Clapp and represented by the coefficients of $-.38$ and $-.58$, respectively; and (3) the discovery that the size of the sum of a combination is the principal factor but by no means the only factor in determining difficulty of learning.

Chapters iv and v are devoted to a vigorous defense of the new rankings as opposed to the rankings made by Clapp on the basis of his study of errors. The two rankings are found to differ materially, the correlation being but .66 in the case of the addition combinations and .72 in the case of the subtraction combinations. The authors of the present report frankly concede that they have not discovered the inherent difficulty of the various combinations but that "the difficulty rankings as reported are based on actual learnings conducted as they were conducted. Different conduct would have yielded different rankings" (p. 4). On the other hand, the authors insist that their rankings approach more nearly a solution of the problem than do the rankings made by Clapp. Their arguments in this case seem to be thoroughly sound. Still, as pointed out by the authors themselves, it is a peculiarly difficult problem to determine the exact degree of difficulty represented by each combination for the reason that one combination is always learned after another and the learning of the first may vitally affect the learning of the second. The only apparent solution of the problem by this method is to be found in a huge investigation in which through a process of rotation all the possible orders of teaching the combinations are tried. Such an investigation the authors are willing to undertake "only in the next world" (p. 9). Whether Knight and Behrens have supplied the difficulty rankings which will prove to be finally acceptable, they have at least indicated a direction for future research and have suggested a technique therefor.

WILLIAM A. BROWNELL

GEORGE PEABODY COLLEGE FOR TEACHERS

A guide for the teaching of home economics.—One of the outstanding needs in the field of home economics today is for teachers with a vision of the social and educational values of their subject. The manipulative processes pertaining to foods and clothing often prove so attractive to teachers and pupils that many of the greater values of home economics are neglected. When this happens, the subject is not made a real educational challenge to the pupils. The need resolves itself into the question: Of the wealth of home economics subject matter, what should be taught, and how should it be taught, to help girls to be more socially efficient?

The authors of *The Teaching of Home Economics*[1] have taken a long step toward the answer to this question. Much valuable material for teachers of both general and vocational home economics in day, evening, and part-time schools has been included in the eighteen chapters. Exclusive of the introductory chapter, which deals with home economics in the school curriculum and the importance of method in teaching, the material of the book may be classified under the following headings: the laws of learning applied to home economics, objectives, organization and content, methods of instruction, measuring results, home economics in relation to school and community activities, equipment, aids to teaching, and professional growth.

Several of these topics deserve special mention. The chapters on evening and part-time schools and on related subjects contain worth-while information and suggestions not readily available elsewhere. The discussion of the content and the organization of the curriculum should enable teachers to solve some of their curriculum problems. Much can be gained by a careful study of the laws of learning and the methods of teaching. Suggestions for measuring results have been clearly and definitely worked out for the new type of examinations as well as other types of tests. These topics and others have been clarified by numerous illustrations drawn from actual situations. However, it is to be regretted that the psychological and the developmental methods of teaching are not illustrated by complete lessons and units of work. The Appendix, which contains sources of help, score cards, rating scales, samples of unit instruction sheets, and other teaching aids, is one of the most valuable parts of the book.

Superintendents and principals wishing to acquaint themselves with the rapidly developing subject of home economics in day, evening, and part-time schools will find a wealth of information in a compact, concise form. Teachers, supervisors, and teacher-training departments will welcome the book because of the vision of home economics portrayed and because of the many practical helps given.

LILA M. WELCH

UNIVERSITY OF MISSOURI

[1] Clara M. Brown and Alice H. Haley, *The Teaching of Home Economics*. Boston: Houghton Mifflin Co., 1928. Pp. xii+396. $2.00.

A new school atlas.—An atlas[1] of the world prepared by George Philip and W. R. McConnell will be of interest to teachers of the upper grades and of the junior high school. The maps cover both political and physical geography and are especially detailed in those aspects of geography which are of major importance to pupils in the United States.

The pages of the atlas are $8\frac{3}{4} \times 11$ inches. The mechanical work on the maps is excellent. Ninety-six pages are devoted to maps, while fifty-eight pages are devoted to a location index, which gives the name of the place, the region in which it is located, the latitude and the longitude, and the page reference.

Five features of the atlas deserve special mention. (1) Throughout the atlas emphasis is given to the fundamental physical conditions underlying political or economic geography. (2) The comparative method is used in organizing the map material. This will be particularly helpful to junior high school pupils. (3) There is a special series of maps relating to the geography of the United States, which is considerably more detailed and complete than that usually found in such atlases. (4) There is a series of maps of principal cities. The importance of such maps for children has been greatly increased by the development of automobile travel. (5) There is a comprehensive series of maps relating to climatic conditions throughout the world.

Manual of information on American art.—Few public-school teachers in America have adequate education in the field of art. Teachers who feel handicapped by a lack of knowledge relating to this subject will welcome a book[2] by Rilla Evelyn Jackman. The material in the book is presented in four general divisions, namely, "The Crafts and Industries," "Painting," "Sculpture," and "Architecture."

> The arrangement of the material was finally made with three things in mind: first, the period in which the artist lived; second, the places in which he received his principal training, even though that training, as has often been the case, had no lasting influence on his art; and, third, the class of work for which the artist is most widely known. The early life and training of the artist make up the background, while his achievements and the honors he has won determine the amount of space allotted to him in these pages [p. v].

The book contains 248 plates, which present some of the most important productions by American artists. There are also a selected bibliography and an excellent index. The index is particularly well organized to facilitate the rapid finding of specific information relating either to an artist or to a particular piece of art. The book will be of value both to elementary-school and junior high school teachers who wish to enrich the art interests of their pupils and to normal-school instructors of courses in the teaching of art. In the case of the latter group, the book deserves consideration as a possible textbook.

[1] *Appleton's Modern School Atlas.* Edited by George Philip and W. R. McConnell. New York: D. Appleton & Co., 1928. Pp. xiv+96+58.

[2] Rilla Evelyn Jackman, *American Arts.* Chicago: Rand McNally & Co., 1928. Pp. xxxiv+562.

CURRENT PUBLICATIONS RECEIVED

GENERAL EDUCATIONAL METHOD, HISTORY, THEORY, AND PRACTICE

ALPERT, AUGUSTA. *The Solving of Problem-Situations by Preschool Children:* An Analysis. Teachers College Contributions to Education, No. 323. New York: Teachers College, Columbia University, 1928. Pp. 70.

ANDRUS, RUTH. *An Inventory of the Habits of Children from Two to Five Years of Age.* New York: Teachers College, Columbia University, 1928. Pp. 52.

BROWNELL, CLIFFORD LEE. *A Scale for Measuring the Antero-posterior Posture of Ninth Grade Boys.* Teachers College Contributions to Education, No. 325. New York: Teachers College, Columbia University, 1928. Pp. viii+52.

DORRIS, ANNA VERONA. *Visual Instruction in the Public Schools.* Boston: Ginn & Co., 1928. Pp. x+482. $2.64.

DRUM, WARREN NEVIN. *A Preview of Teaching.* Boston: Ginn & Co., 1928. Pp. viii+338. $1.80.

DYER, ANNIE ROBERTSON. *The Administration of Home Economics in City Schools:* A Study of Present and Desired Practices in the Organization of the Home Economics Program. Teachers College Contributions to Education, No. 318. New York: Teachers College, Columbia University, 1928. Pp. 144.

HOLLOWAY, WILLIAM J. *Participation in Curriculum Making as a Means of Supervision of Rural Schools.* Teachers College Contributions to Education, No. 301. New York: Teachers College, Columbia University, 1928. Pp. 54.

KELTY, MARY G. *Teaching American History in the Middle Grades of the Elementary School.* Boston: Ginn & Co., 1928. Pp. viii+748. $2.40.

KEYS, NOEL. *The Improvement of Measurement through Cumulative Testing:* An Empirical Study of Two Hundred Elementary School Children over a Period of Four Years. Teachers College Contributions to Education, No. 321. New York: Teachers College, Columbia University, 1928. Pp. viii+82.

LINSCHEID, ADOLPH. *In-Service Improvement of the State Teachers College Faculty.* Teachers College Contributions to Education, No. 309. New York: Teachers College, Columbia University, 1928. Pp. 100.

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ORLEANS, JACOB S., and SEALY, GLENN A. *Objective Tests.* Yonkers-on-Hudson, New York: World Book Co., 1928. Pp. x+374. $2.20.

PHILLIPS, BARBARA E. *The Use of Modern Literature in High Schools.* Boston: Richard G. Badger, Publisher, 1928. Pp. 114.

REEVES, CHARLES EVERAND, and GANDERS, HARRY STANLEY. *School Building Management:* The Operation and Care of School Plants. New York: Teachers College, Columbia University, 1928. Pp. xiv+396.

RUGG, HAROLD, and SHUMAKER, ANN. *The Child-centered School:* An Appraisal of the New Education. Yonkers-on-Hudson, New York: World Book Co., 1928. Pp. xiv+360.

SHANNON, JOHN RAYMOND. *Personal and Social Traits Requisite for High Grade Teaching in Secondary Schools.* Terre Haute, Indiana: State Normal Press, 1928. Pp. 112.

YOUNG, DALE S. *Control of Available Public School Income with Special Reference to Cities of New York State.* Teachers College Contributions to Education, No. 305. New York: Teachers College, Columbia University, 1928. Pp. x+110.

BOOKS PRIMARILY FOR ELEMENTARY-SCHOOL TEACHERS AND PUPILS

ALDREDGE, EDNA M., and MCKEE, JESSIE FULTON. *Wags and Woofie.* Boston: Ginn & Co., 1928. Pp. viii+112. $0.64.

BISHOP, MILDRED C., and ROBINSON, EDWARD K. *American History Workbook,* Part Two—Since 1829. Boston: Ginn & Co., 1928. Pp. 55. $0.48.

City Stories. Told by city children as they go exploring in New York. Recorded and arranged by Florence E. Matthews and Rebecca J. Coffin. New York: Macmillan Co., 1928. Pp. xii+102. $2.00.

Course of Study and Syllabus in Grammar for Elementary Schools, Grade 7A–Grade 8B. New York: Board of Education, 1928. Pp. 18.

DUNN, FANNIE WYCHE, and TROXELL, ELEANOR. *In Field and Forest.* Mother Nature Series. Evanston, Illinois: Row, Peterson & Co., 1928. Pp. 288.

GRADY, WILLIAM E., and KLAPPER, PAUL. *Readings for the Fifth Year:* First Half, pp. viii+248; Second Half, pp. vi+250. New York: Charles Scribner's Sons, 1928.

GRADY, WILLIAM E., and KLAPPER, PAUL. *Readings for the Sixth Year:* First Half, pp. vi+250; Second Half, pp. vi+250. New York: Charles Scribner's Sons, 1928.

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